Mar - Apr 1956

Freeways In District IV

Bay Area Network Is More Readily Evident

By B. W. BOOKER
Assistant State Highway Engineer

THE CHRONICLING of the development of the Bay area freeway system has followed the varied pattern of its construction. From the time of the opening of the first freeway section in 1947, as each small segment took form, articles appeared in various publications describing the planning and procedures which brought that section into being.

Although sometimes not apparent, these disconnected segments were part of an over-all plan. One might well have asked why the plan was not progressive in the sense of creating a continuous freeway, each completed segment extending the initial unit toward its ultimate destination. The answer is that priority of construction units have followed a logical pattern predicated on elimination of the worst deficiencies as quickly as possible within financial limitation. It was necessary to fit the construction program accordingly, and hence the disjointed aspects of the early stages.

Not until 1953, when various major projects were completed in the immediate metropolitan areas, did the plan unfold to a point wherein it was possible to treat the completed portions as an integrated development. Each year thereafter, it has been an interesting and pleasant task to record in this journal the progress of the preceding year, and to outline the program of current and future construction.

Complete System

In discussing the growth of the area's modern highways, one becomes conscious that the word "freeway" occurs with sometimes monotonous regularity. Actually, the goal is not merely to build this type of facility. The objective is to create a complete system of all types of highways capable of moving people and goods rapidly, safely and conveniently between concentrations of population, at the same time affording similar service to dispersions along the routes. Since the main artery of such a system is the freeway, the name has become synonymous with modern highway development.

B. W. BOOKER

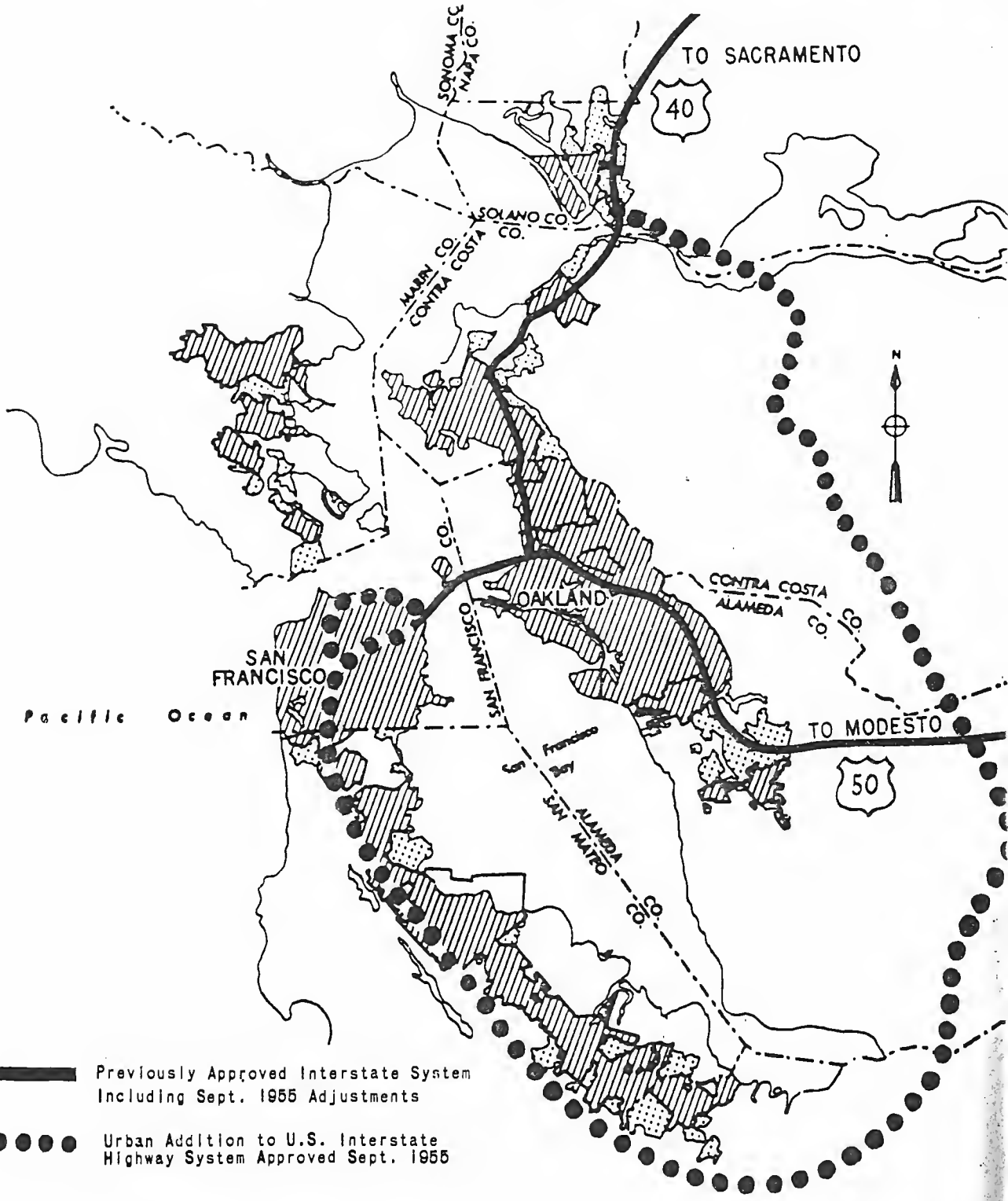
It would be difficult to imagine a modern public work upon which more people depend than that of motor transport and the roads upon which it operates. Affecting our daily programs and our manner of living as it does, it is to be expected that conflict of interests will arise in its construction and in its operation, and it follows that from such conflict will arise criticism. In the foreground of this criticism is the allegation that freeways are obsolete immediately after completion.

Logically, the fact that freeways are traveled to their maximum capacity is the reverse of obsolescence. It is conclusive proof that the freeway has accomplished its purpose. The advantages offered have drawn traffic from congested streets and roadways, the force of the attraction being limited only by the capacity of the facility. Pausing for a moment to reflect upon the rise of traffic volume since 1947, when the first section was opened, we can readily contemplate the complete strangulation of the area if the present freeways disappeared, and the system was returned to its pattern of that date.

Problem of Future

Obviously, the routes presently being constructed will not meet the needs of the future. It is equally obvious that we should not attempt to construct the ultimate development at this time. To do so would seriously delay initial correction of the numerous severe deficiencies throughout our highway system. Current construction does provide for additional lanes to be built when needed, and in one case, that of the Eastshore Freeway south of High Street, we are now constructing the additional lanes provided for in the original design.

However, the useful number of lanes which can be expected to operate efficiently is limited and studies are being made of new routes for area traffic distribution. Complicating such studies is the unusual geography of the area. Separated by the waters of the bay, the two great centers of population on the easterly and westerly sides must be served by virtually two systems, the integration of the sys-



tems being dependent upon crossings available. The cost and complexity of transbay facilities understandably limits their construction, thus creating restrictive controls in planning a balanced network.

New Major Routes

The year 1955 witnessed a significant step toward the creation of new major routes in District IV. As approved by Commissioner C. D. Curtiss of the U. S. Bureau of Public Roads, the National System of state Highways was adjusted and mented in the amount of 135 m the Bay area. These highway eligible for substantial allocatio Federal Interstate System funds

the terms of legislation now being considered by the Congress.

Much of the routing added was already established as a part of the State Highway System and planning for the future development of these as freeways is generally well advanced.

Portions of the future freeway system in San Francisco are included in the addition but studies of the general location of these routes are not complete to date.

A major part of the addition is a 115-mile circumferential route around the San Francisco Bay area. This route begins at the south city limits of San Francisco and runs southeasterly, west and roughly parallel to US 101 (El Camino Real) then swings easterly in the vicinity of San Jose, veering northerly through central Alameda County and the San Ramon Valley in Contra Costa County to the Martinez-Benicia area, finally connecting with US 40 in Vallejo.

From San Francisco to San Jose, the proposed route would constitute a new highway not presently in the State Highway System. From a connection with Sign Route 17 west of San Jose, it follows the general location of State Sign Routes 17 and 21 as far as Benicia. A substantial portion of the East Bay route is in the planning stage, in design, or is currently under construction. The general location of the new route is shown on the accompanying map. It is apparent thereon that it will supplement the services of the present Bayshore Freeway on the San Mateo Peninsula as well as El Camino Real and the various local arterials accommodating both the through and many of the local traffic desires. Likewise, on the East Bay side, it will supplement the Eastshore Freeway and the transcontinental US 40, serving through traffic and the expanding local traffic of central Alameda and Contra Costa Counties along the way.

Sixty-three Construction Projects

As of March 1, 1956, District IV had a total of 63 construction projects under way. Twenty-seven of these involved development of the freeway network.

Seventy-one miles of new freeway construction were included in the work under progress. Budgeted and not yet started are another 27 miles of freeway improvement. After completion of the 1956-57 Fiscal Year construction program, a total of 250 miles of freeway will be in service in this district.

The district is currently operating under a program of $61,647,000 for construction and right of way in the 1955-56 Fiscal Year and $59,172,000 in the 1956-57 Fiscal Year. In addition, contracts under way as part of the Carquinez toll facility project amount currently to $28,834,000, of which $20,877,000 represents work located in District IV.

Status of District IV freeways is indicated on the accompanying map. Development of this network of modern arterials of safe, convenient and rapid transportation is becoming more and more apparent as the fruits of previous years of planning and endeavor are rapidly being transformed from blueprints to realities, commensurate with the availability of funds for highway construction.

Highlights of Progress

Highlights of the progress of these transformations during the past 12 months together with mention of projects financed but not yet under construction are indicated in the following excerpts from activities on our various freeway routes.

BAYSHORE (JAMES LICK FREEWAY AND SKYWAY)

Several additional units of this freeway were placed into service during the past 12 months.

Except for a short portion southerly of Third Street which will be completed in conjunction with the "open water" fill relocation now under way south of the city limits, all of Route 68 within the city has now been completed as a full freeway.

Traffic now traverses this six- and eight-lane Skyway from Third Street near the south city limits directly to the San Francisco-Oakland Bay Bridge.

Skyway service is also provided via a portion of the Central Freeway along 13th Street from the Division Street Interchange toward the Golden Gate Bridge. It presently terminates at South Van Ness Avenue and Mission Street.

The completed Skyway has already been a boon to both intracity and intercity traffic. With the completion of the part of the Embarcadero Freeway from the Bay Bridge to the Broadway Tunnel, portions of which are now financed or under way, effective distribution of Skyway traffic within the downtown San Francisco area will be accomplished.

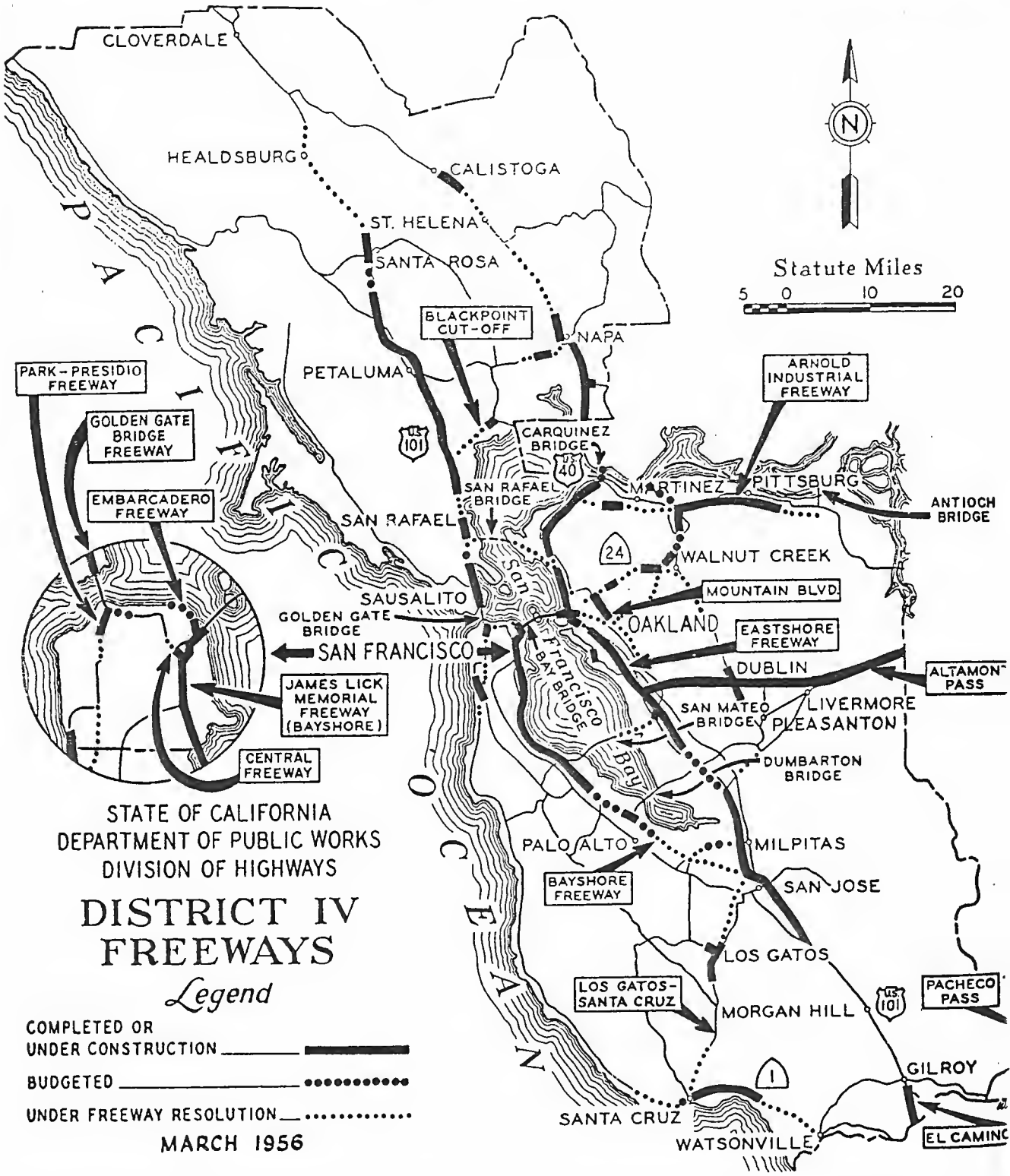
More and more use of the Skyway is being made for mass transit through the scheduling of busses destined for areas as far from downtown as Lake Merced.

Some 110,000 vehicles traverse the Skyway daily. All of these users are afforded a scenic, awe-inspiring panoramic view of the San Francisco skyline previously unseen by the multitudes of vehicle users who traveled the low level congested city streets.

The unit between Hester Avenue and Alemany Boulevard was started in June, 1953, and completed in September, 1955. Contractor on this $2,400,000 project was Charles L. Harney, Inc. This project is the southernmost part of the completed freeway in San Francisco and has practically eliminated the severe congestion at the Third Street intersection as well as along the old Bayshore Boulevard during peak hours. This will be further improved in the future when traffic will be routed over the Third Street Interchange and across the open water fill project to the south. This will be effected upon completion of the latter project presently contemplated for mid-year 1957.

The $3,900,000 unit from Eighth Street to Fourth Street which was started in October, 1953, was completed in July, 1955. This was also constructed by Charles L. Harney, Inc., and is 0.7 mile long.

The project from Fifth Street to Third Street was constructed by Eaton and Smith at a cost of $900,000. This was started in May, 1954, and completed in July, 1955. It connects the Skyway with the San Francisco-Oakland Bay Bridge and also will serve as a part of the connection to



the Embarcadero Freeway, construction of which is now under way.

CENTRAL FREEWAY

The first portion of the Central Freeway was placed in service during the past year with the completion of three projects by Charles L. Harney, Inc. This freeway is also on an elevated structure and is a part of the Skyway.

The unit along 13th Street fr
Division Street Interchange to
Van Ness Avenue and Mission
provided Central Freeway ser
and from the south. It was sta

July, 1952, and completed in March, 1955. It consisted of two contracts, one for the substructure and footings, the other for the superstructure. The unit connecting the Central Freeway with the Skyway and Bay Bridge was started in June, 1952, completed in April, 1955. All three projects amounted to one mile in length and cost $5,000,000.

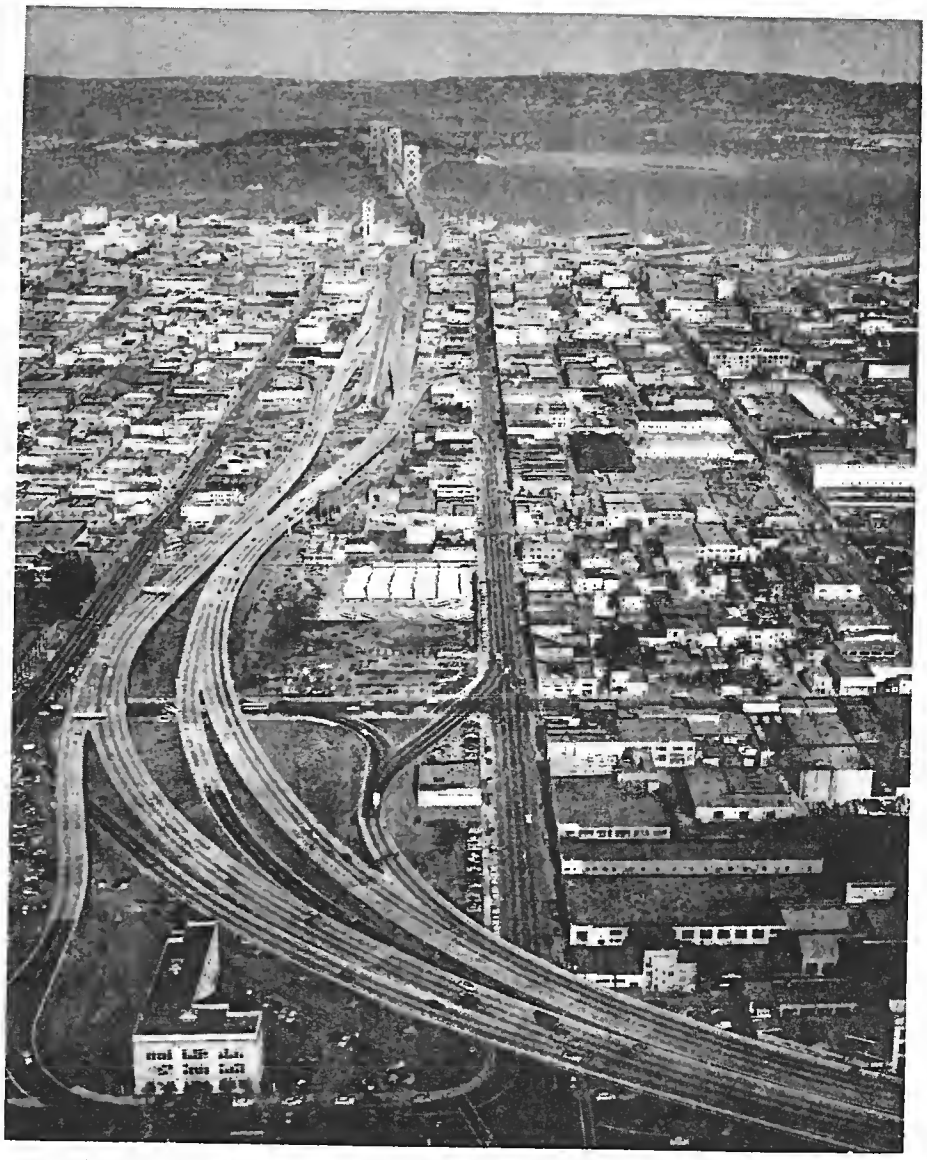
Plans are nearing completion for the continuance of this freeway from South Van Ness Avenue to Turk Street, a distance of approximately 1.1 miles. Right-of-way acquisition is now under way. This future unit, like the rest of the Skyway, will be elevated viaduct, but will be a two-level facility. Three southbound lanes will be elevated over the three northbound lanes and all will be elevated over the existing city street system, with most streets remaining open.

EMBARCADERO FREEWAY

Construction of the first project on this multilane elevated freeway was started in May, 1955, and is now in progress. This work is being performed by MacDonald, Young and Nelson, and Morrison. Knudsen Co., Inc., at our estimated cost of $5,600,000. It is 0.9 mile long and will provide a connection between the Skyway and Mission Street at Main and Beale Streets. The Oakland bound movement and the extension of the freeway to Howard Street is estimated at $2,000,000 and is now under way under a contract with C. L. Harney, Inc. Plans for the continuance of this freeway past the Ferry Building to Broadway are virtually complete and it is expected that a contract will be advertised in May of this year. This will complete the total of 1.5 miles between the Bayshore, Bay Bridge and Broadway. It is planned to eventually extend this freeway to a connection with the Central and Golden Gate Freeways near Lombard Street. Studies are in the early stages at present and the location for this future development has not been determined.

SOUTHERN FREEWAY

With virtual completion of the Bayshore (James Lick) Freeway in San Francisco, and as the most needed units of the Embarcadero and Central Freeways are now in design and construction stages, planning has been directed to other near future segments of the much needed integrated San Francisco system.



James Lick (Bayshore) Freeway in San Francisca toword Bay Bridge; Seventh and Eighth Street ramps in lawer center; Fourth and Fifth Street ramps in center

To this end, preliminary reconnaissance studies have been completed covering the Southern Freeway which begins at the south city limits near Junipero Serra Boulevard and traverses generally on relocation along the Southern Pacific Railroad roadbed and Alemany Boulevard to the Alemany Interchange on the Bayshore Freeway. This location has been presented to the public in a recent meeting held for informational purposes. The Highway Commission held a public hearing on the proposed location on April 6, 1956, in San Francisco.

The City of San Francisco is well advanced with their plans for the extension of the Southern Freeway from the Bayshore-Alemany Interchange to a junction with the proposed Southern Crossing and Embarcadero Freeway in the vicinity of Third and Army Streets.

RIGHT—First stage of Embarcadero Freeway construction; Bay Bridge approaches left.
LEFT—Embarcadera Freeway construction showing connection to Main and Beale Streets.

GOLDEN GATE FREEWAY

Included in the 1956-57 Freeway Construction Program is the amount of $3,900,000 for the revision of the interchange between the Golden Gate and Park Presidio Freeways at the south approach to the Golden Gate Bridge. This 1.3-mile project will add two more lanes to the Golden Gate Freeway between the Park Presidio Freeway and the Marina approach resulting in a total of eight lanes as well

LEFT—Canstruction scene on Bayshore Freeway, looking south from Third and Boyshare Interchange in San Francisco taward Sierra Point. RIGHT—Open woter fill for Bayshore Freewoy acrass Candlestick Cove. Grading operatians at Sierra Paint in faregraund.

as revising the ramp connections accordingly. This project should be under construction by the end of this year.

BAYSHORE FREEWAY, SAN MATEO COUNTY

The over water fill section between the completed freeway at Third Street in San Francisco southerly to Candlestick Point and across the open water of an arm of San Francisco Bay to Sierra Point and connecting with the completed freeway near Butler Road, in South San Francisco is the only portion of the freeway remaining to be completed between the Bay Bridge and just north of Redwood City. With the exception of this remaining link, construction of which is now under way, the entire 25 miles can now be traveled on a full six-lane freeway to Alemany Interchange and on eight lanes to the bridge.

When completed in 1957, this project will afford six lanes of full freeway with provisions for eight lanes in the future. The present six-lane highway will continue to serve adjacent property and as an entrance into the city.

A saving of as much as 20 minutes of travel time in one direction will be realized by the great number of commuters who twice daily traverse this route.

On the north end of this unit, construction was performed by Edward Keeble. The contract was for grading and structures between Third Street and Candlestick Point. This $700,000 project is 0.7 mile long, and was completed in October, 1955. Paving will be done upon completion of the remaining portion of the grading and structures of the over water fill unit.

Over Water Project

From Candlestick Point southerly, work was previously completed on two contracts for filling experimental sections of embankment, displacing the highly fluid bay mud which reaches a maximum depth of 70 feet. The first job extended 0.3 mile southerly from Candlestick Point. It was performed by Edward Keeble and amounted to $160,000. The second experimental fill, 0.4 mile long, was not contiguous to the first one. It was performed farther south in the Bay where the mud depth was greater. This job was done by Guy F. Atkinson and cost $860,000. The fill closing the gap between the two experimental fills was started in April, 1955, and completed in February, 1956. John Delphia performed this 0.8-mile job at a cost of $400,000.

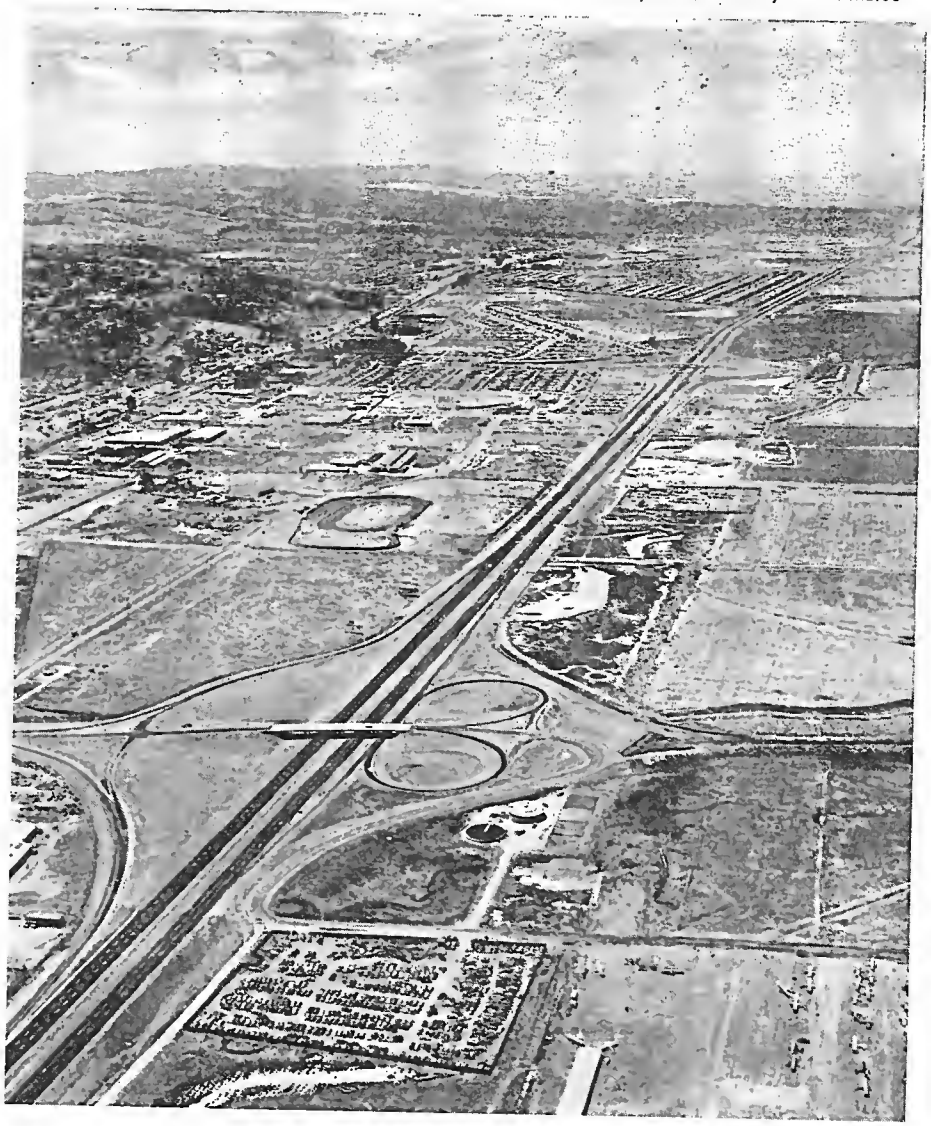
Continued progress has been made by the Guy F. Atkinson Co. over the remaining portion of the grading and structures in this unit of the freeway. This work is comprised of two contracts, one of which was completed in October, 1955. Construction totals $3,800,000.

The last project in this unit, the paving of this 3.6-mile link in continuous freeway is included in the 1956-57 Fiscal Year construction program and will be advertised for bids this summer.

BAYSHORE FREEWAY, SAN MATEO TO SANTA CLARA COUNTY LINE

After this next year's construction progress is completed, the entire Bayshore Freeway in San Mateo County will have been completed. In June, 1955, the Piombo Construction Co. completed the initial six-lane future eight-lane freeway between 16th Avenue in San Mateo and Bransten Road near the San Carlos-Redwood City limits. This project was started in July, 1953, and cost $4,100,000. It eliminated many serious points of

Boyshore Freewoy, showing completed portion ot Holly Street in Son Carlos, northerly to Son Mateo



traffic conflict and provides interchange for local traffic distribution at 19th Avenue in San Mateo, East Hillsdale Boulevard further south, Ralston Avenue in Belmont, and Holly Street in San Carlos.

The remaining eight miles of freeway from Bransten Road to south of the Santa Clara County line is composed of four projects. Three of these amount to $7,000,000 and are included in the 1956-57 construction program. Construction will commence about July of this year. The other project, the Willow Road Interchange, is nearing completion at a cost of approximately $850,000. L. C. Smith Company is contractor on this project which started in May, 1955. It is now in use by traffic and eliminates the most congested intersection on the Bayshore Highway.

SKYLINE BOULEVARD, SAN MATEO-SAN FRANCISCO COUNTIES

In December, 1954, a 2.3-mile portion of expressway on Skyline Boulevard between Edgemar Road and Alemany Boulevard was placed in service. Plans have been completed for the future relocation for Sign Route 1 as an expressway from Edgemar on the coast to connect with the Skyline Boulevard expressway at Edgemar Road. Actual construction is dependent on availability of funds.

In July, 1955, continuation of the expressway northerly of Alemany Boulevard 1.3 miles to the south city limits of San Francisco was started under a contract awarded to Charles L. Harney, Inc. This project cost approximately $350,000. Concurrently, also under construction by Charles L. Carney for the City of San Francisco has been the 1.0-mile portion north of the city limits to Lake Mereed Boulevard, also as an expressway and costing $350,000. Both projects were opened to traffic on March 15, 1956.

These Skyline Boulevard projects provide another major connection to and within San Francisco from the rapidly developing residential areas in

Willow Road Interchange on Bayshore Freeway, looking north

SFX
P85-
#27

PRELIMINARY REPORT

SOUTHERN FREEWAY

JAMES LICK MEMORIAL FREEWAY TO EMBARCADERO FREEWAY

SAN FRANCISCO, CALIFORNIA

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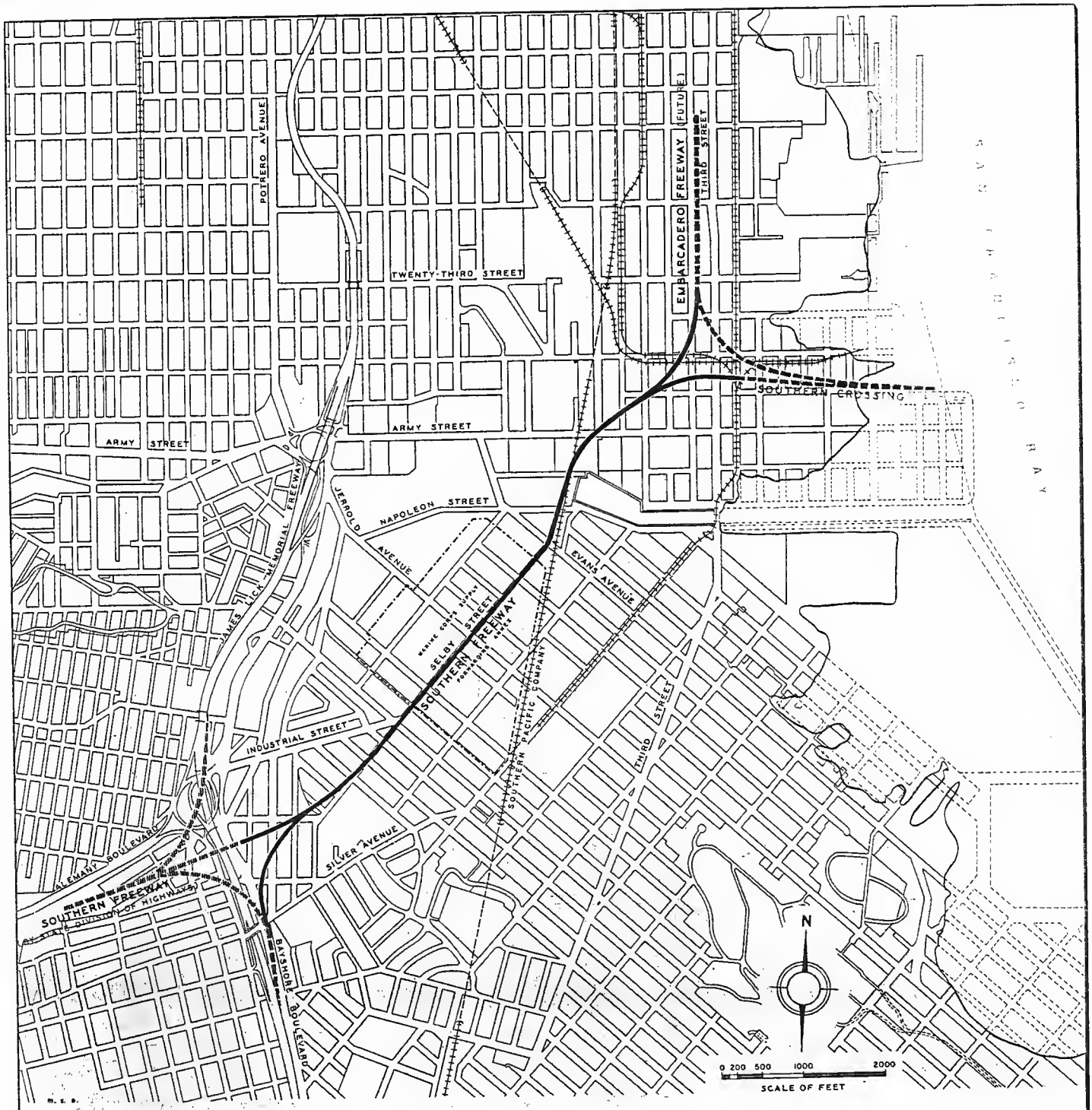


LOCATION PLAN OF PORTION OF SOUTHERN FREEWAY

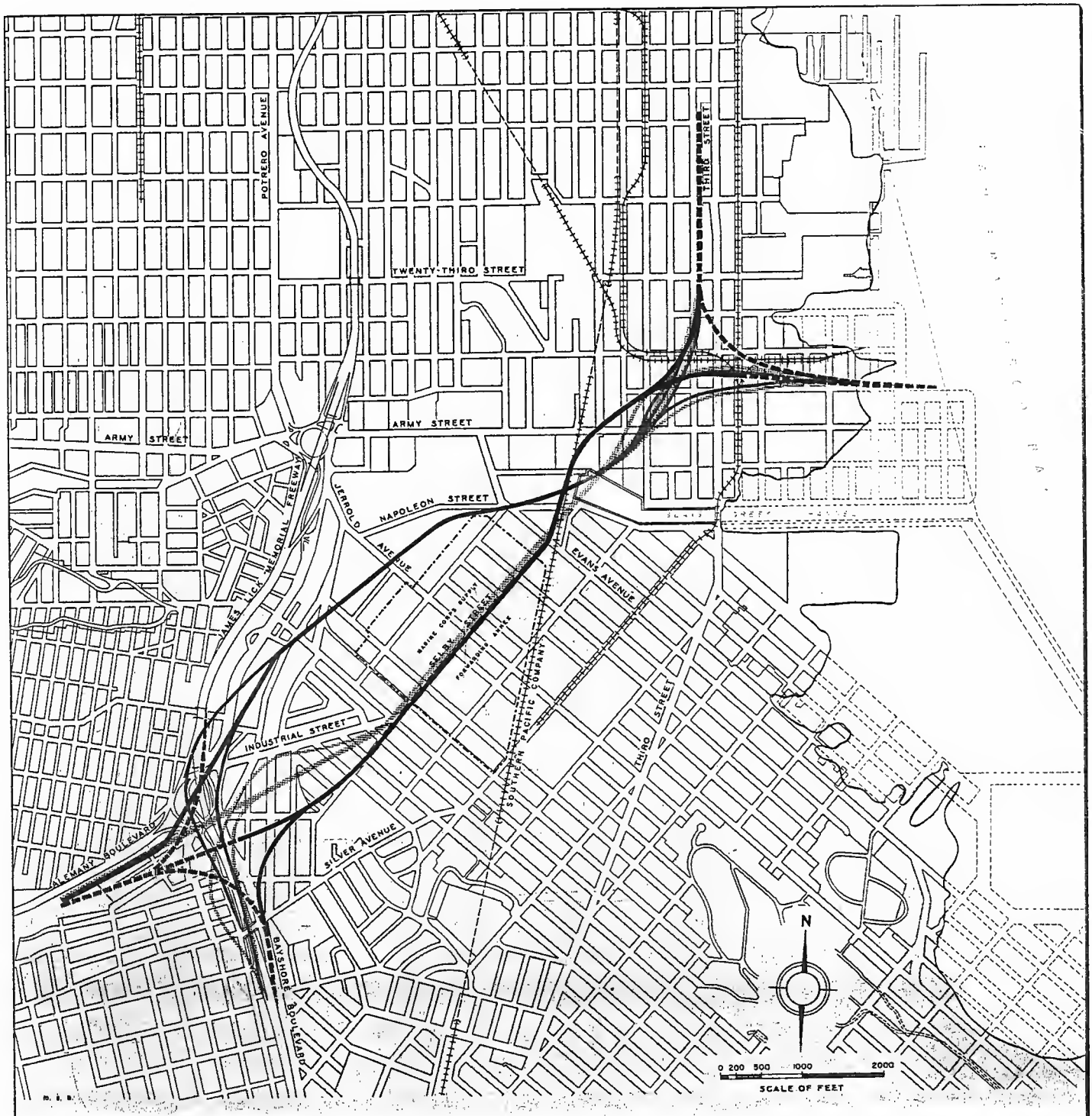
EAST OF JAMES LICK MEMORIAL FREEWAY

LEGEND

SOUTHERN FREEWAY

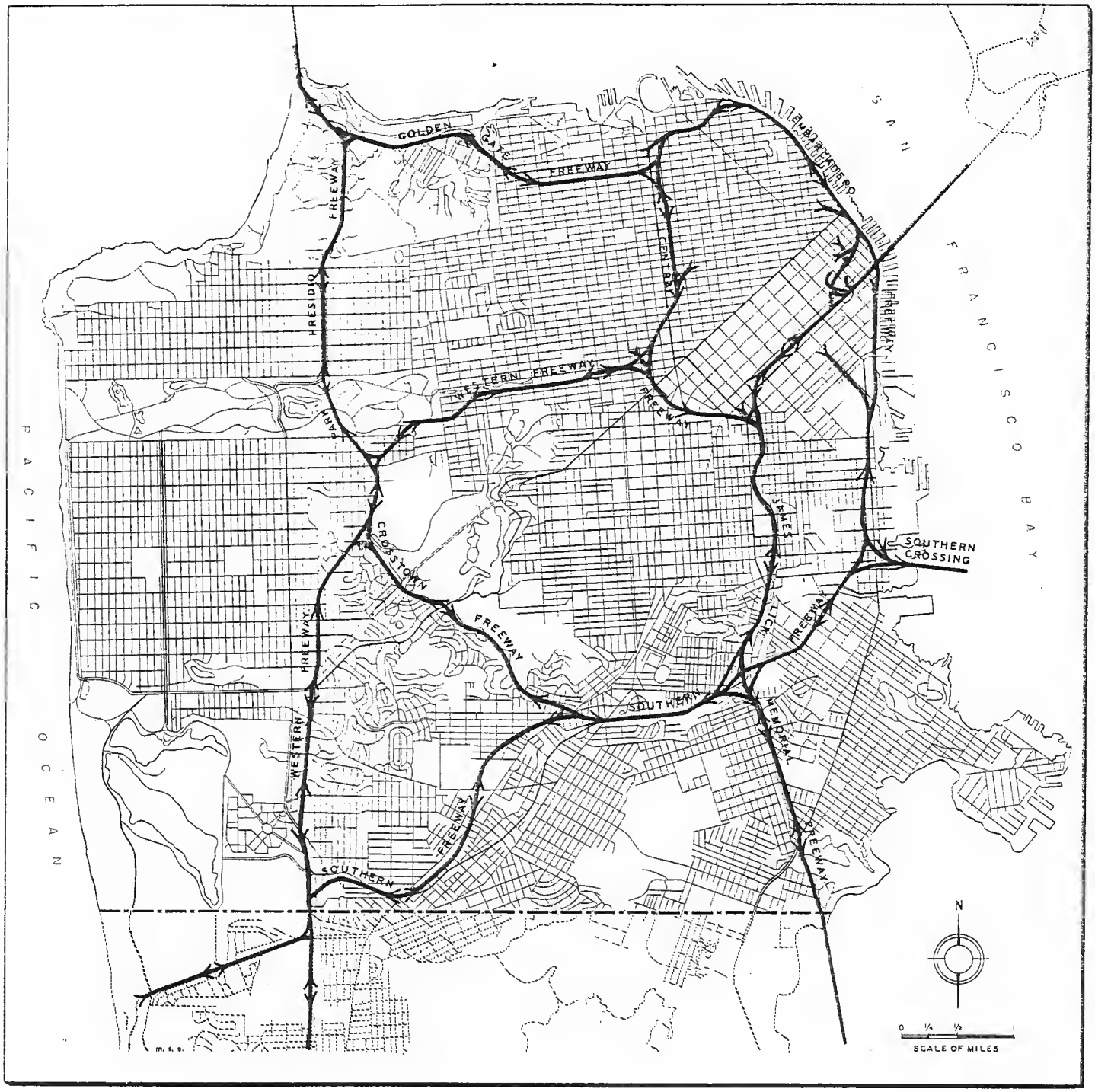
FREEWAYS AND CONNECTIONS BY OTHERS

DE LEUW, CATHER & COMPANY · ENGINEERS · SAN FRANCISCO · JULY 1956

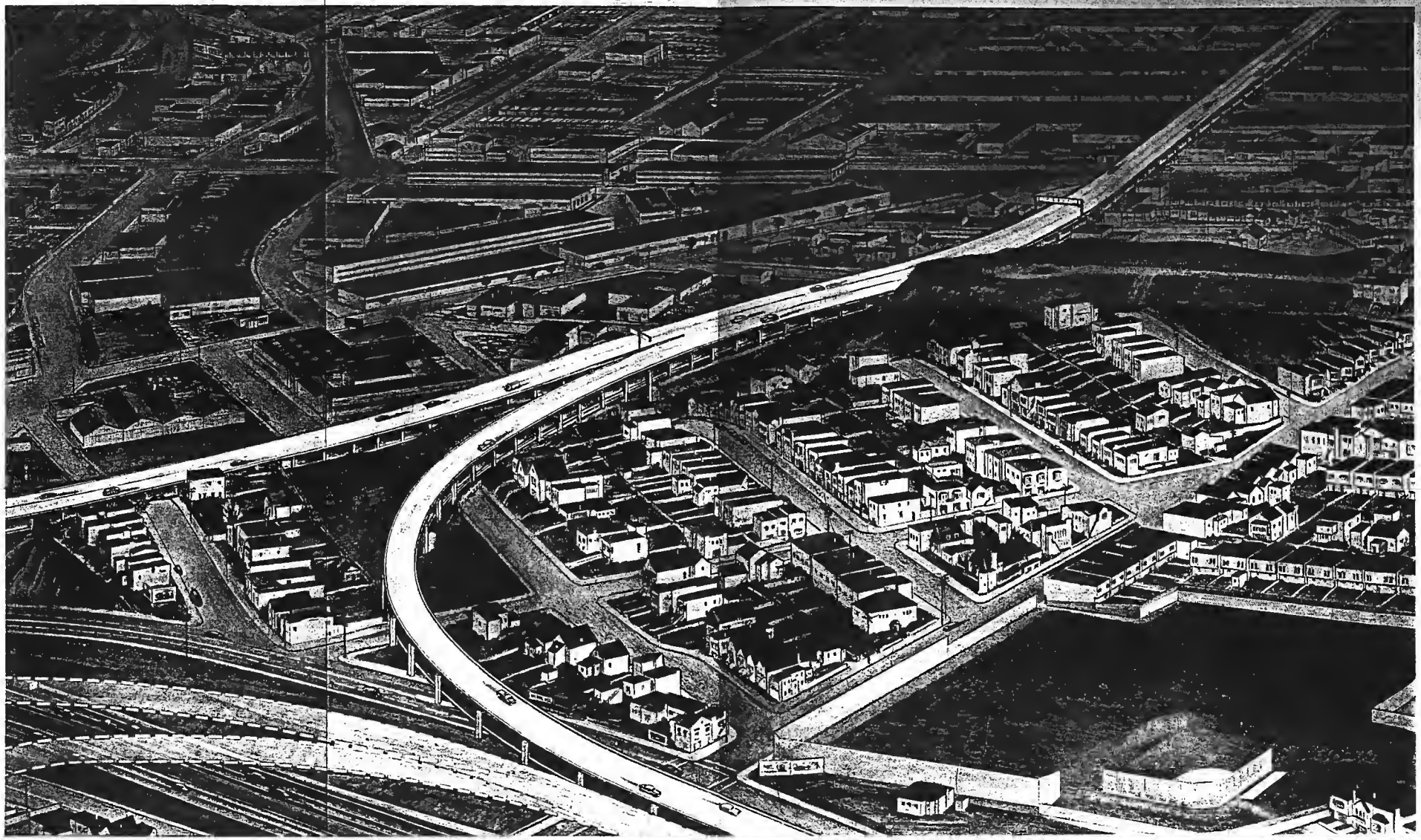


LOCATION PLAN OF ALTERNATE ROUTES STUDIED

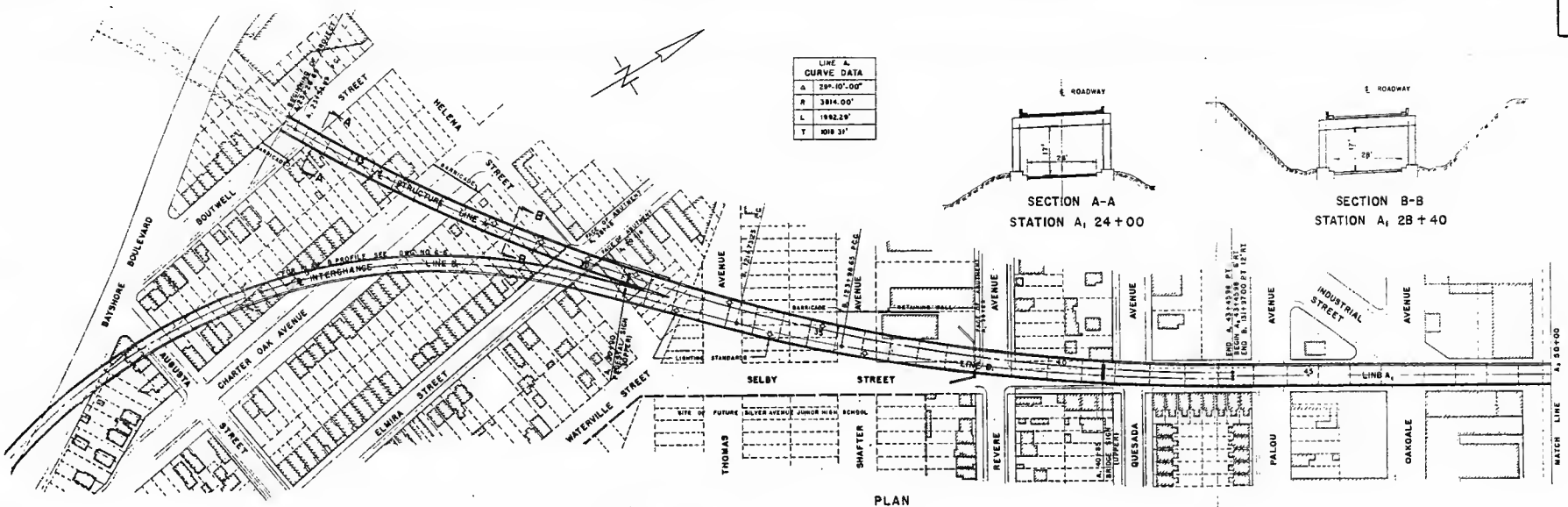
PLATE IV

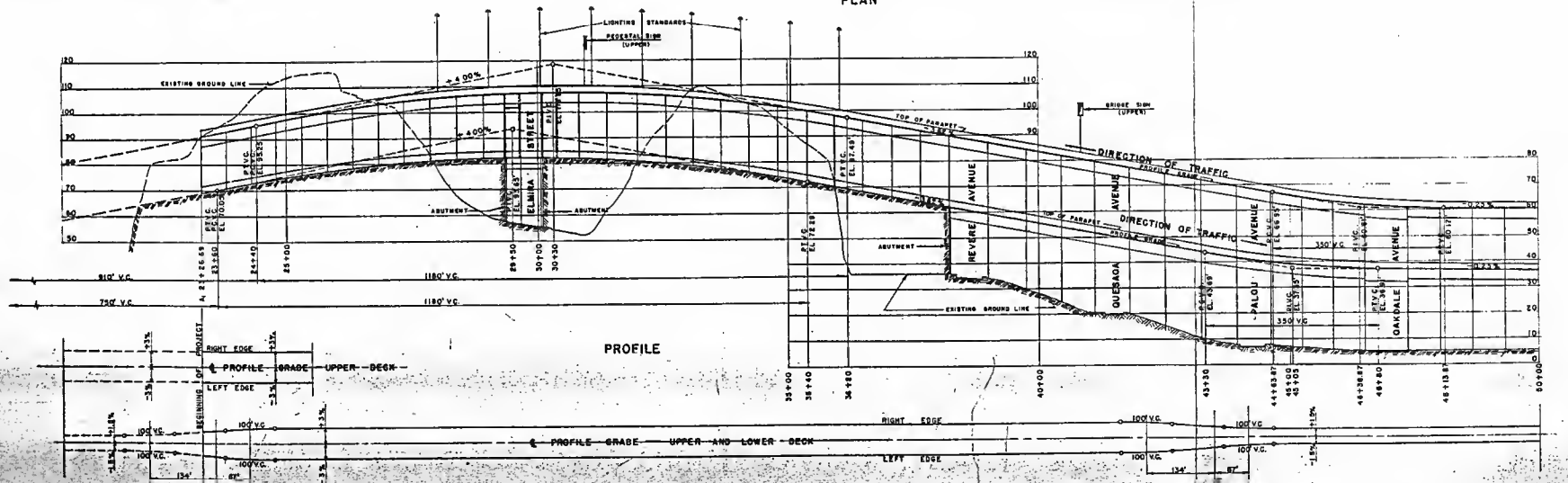


1980 SAN FRANCISCO FREEWAY NETWORK ASSUMED IN THIS STUDY



VIEW OF FREEWAY IN VICINITY OF SILVER AVENUE AND JAMES LICK MEMORIAL FREEWAY



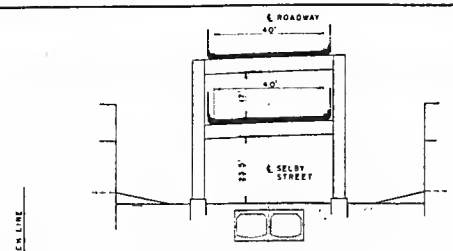


NOTES:
1. ALL ELEVATIONS REFER TO CITY DATUM.
2. FOR DETAILS OF RIGHT-OF-WAY SEE DWG. NO. R-8
3. FOR LIGHTING DETAILS, SEE DWG. NO. E-1 AND E-2

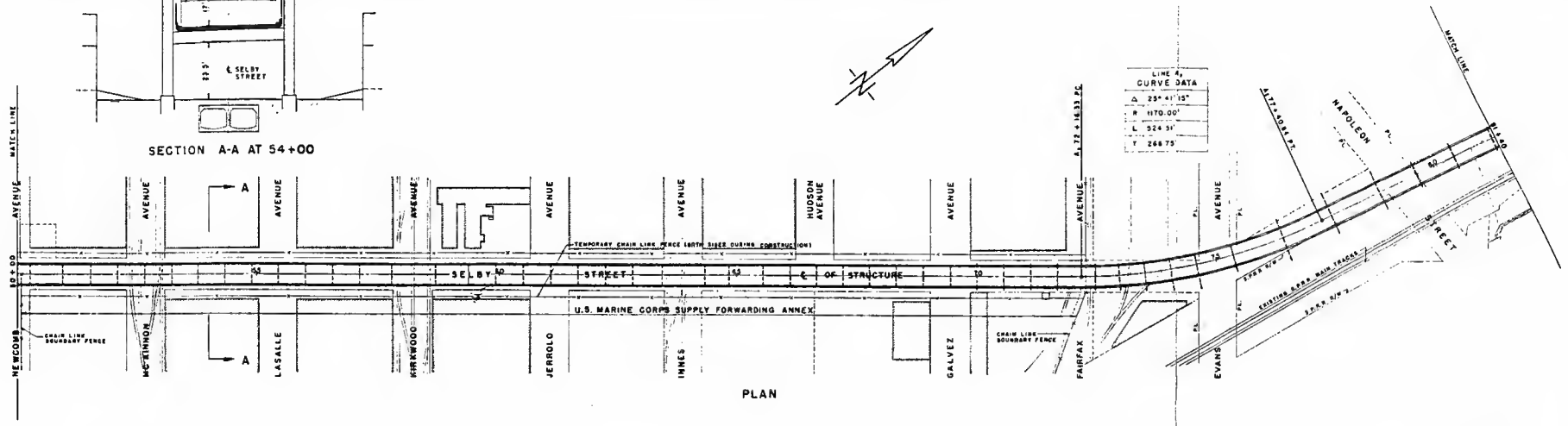
SCALE
HORIZONTAL 1" = 100'
VERTICAL 1" = 20'

CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS
SOUTHERN FREEWAY
PLAN AND PROFILE
BOUTWELL STREET TO NEWCOMB AVENUE
DECEMBER 1955 DWG. NO. C-3

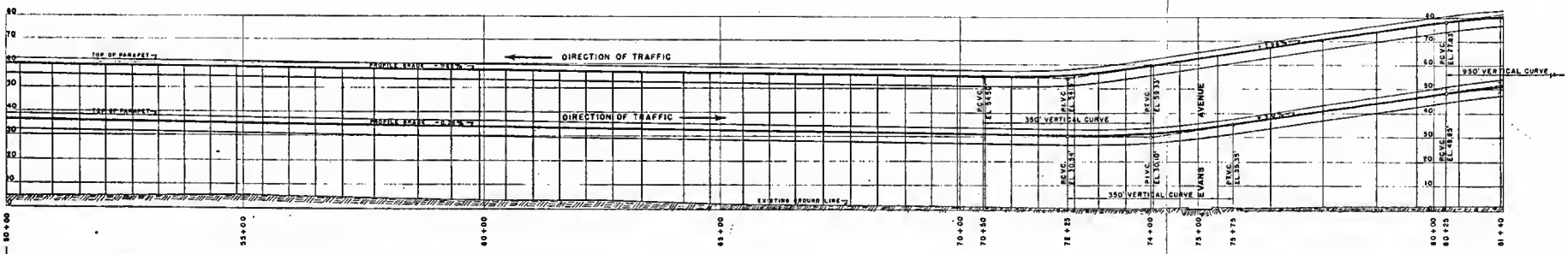
NOTE: THIS REDUCED REPRODUCTION IS NOT AT SCALE SHOWN.



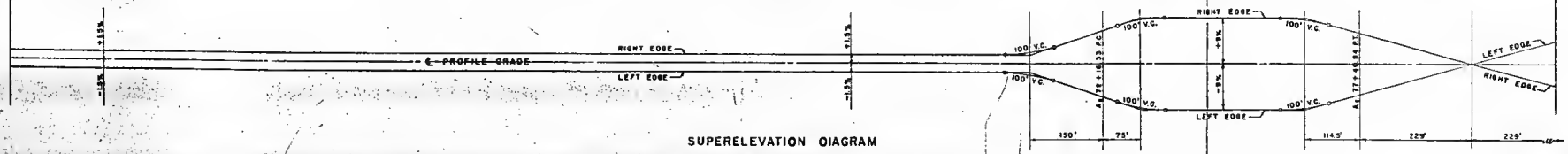
SECTION A-A AT 54+00



PLAN



PROFILE



SUPERELEVATION DIAGRAM

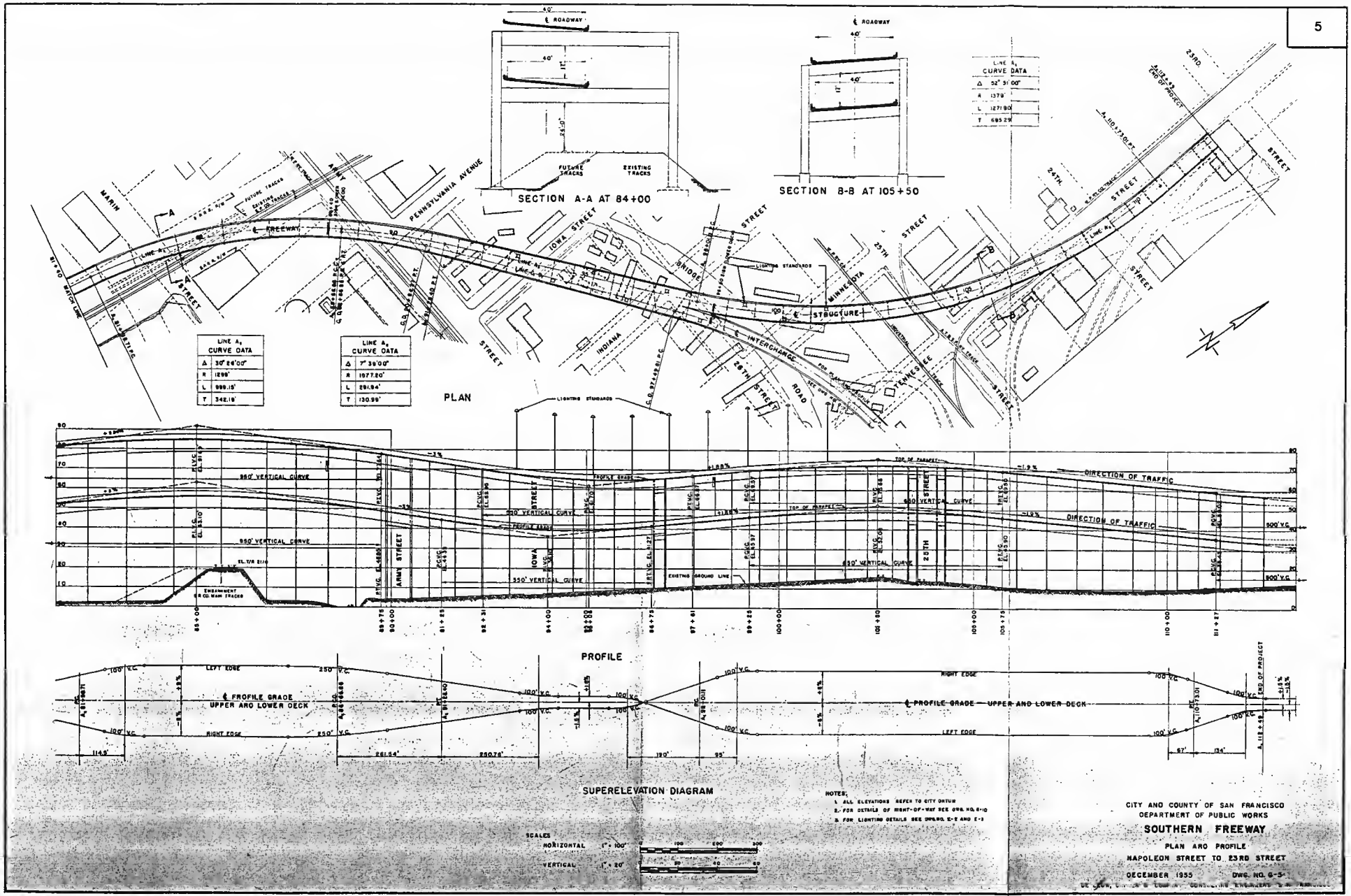
NOTES:

1. ALL ELEVATIONS REFER TO CITY DATUM.
2. FOR DETAILS OF RIGHT-OF-WAY SEE DWG. G-9

SCALE
HORIZONTAL 1" = 100'
VERTICAL 1" = 20'

CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS
SOUTHERN FREEWAY
PLAN AND PROFILE
NEWCOMB AVENUE TO NAPOLEON STREET
DECEMBER 1959 DWG. NO. G-4
DE LEUW, CATHER & COMPANY - CONSULTING ENGINEERS - SAN FRANCISCO

NOTE: THIS REDUCED REPRODUCTION IS NOT AT SCALE SHOWN.



CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

SOUTHERN FREEWAY

PLAN AND PROFILE

NAPOLEON STREET TO 23RD STREET

DECEMBER 1955 DWG. NO. G-5

DE LEUW, CATHER & COMPANY, CONSULTING ENGINEERS, SAN FRANCISCO

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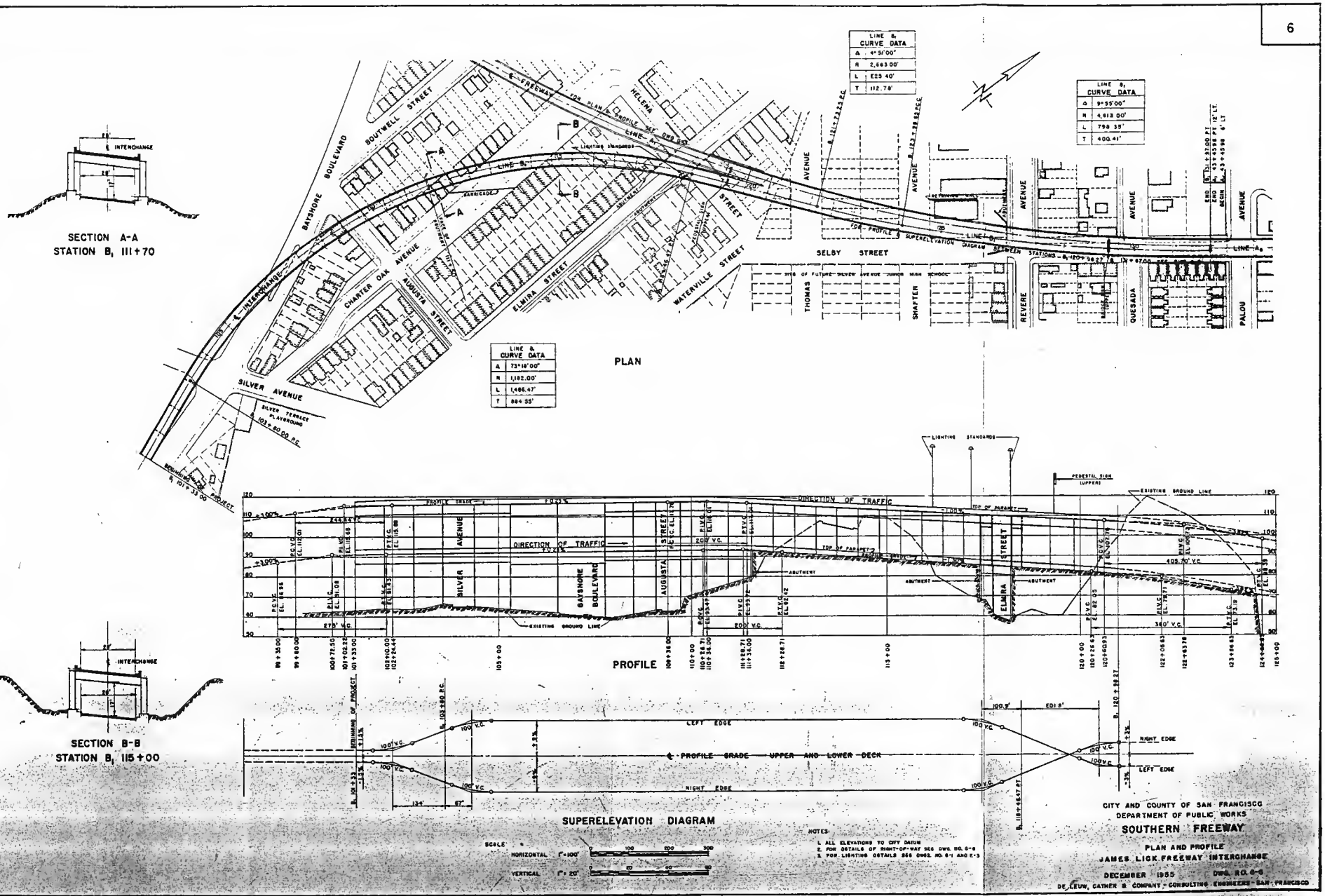

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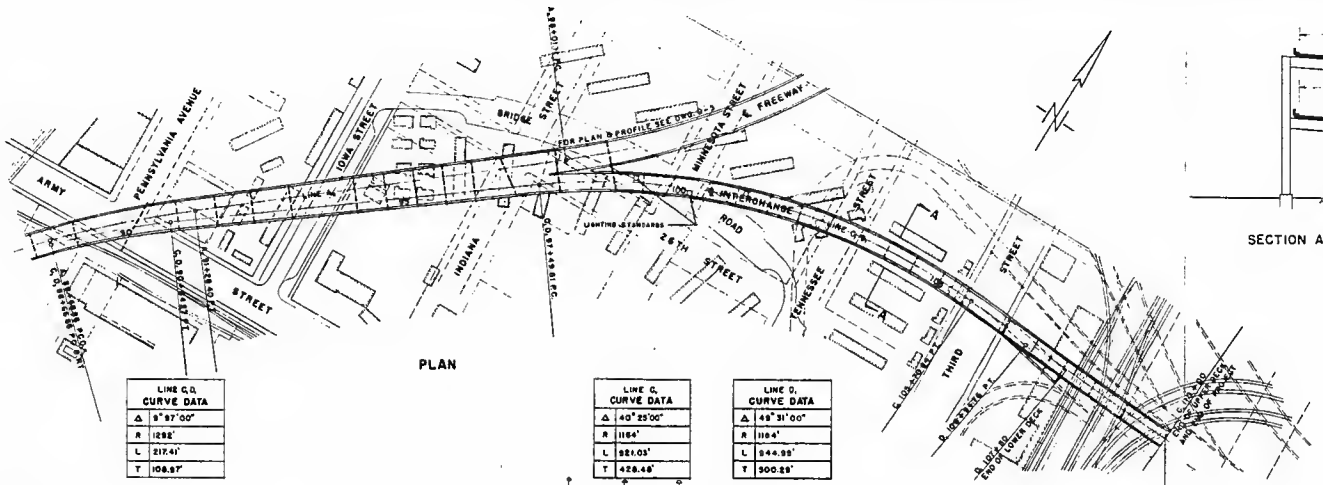
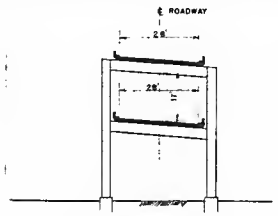


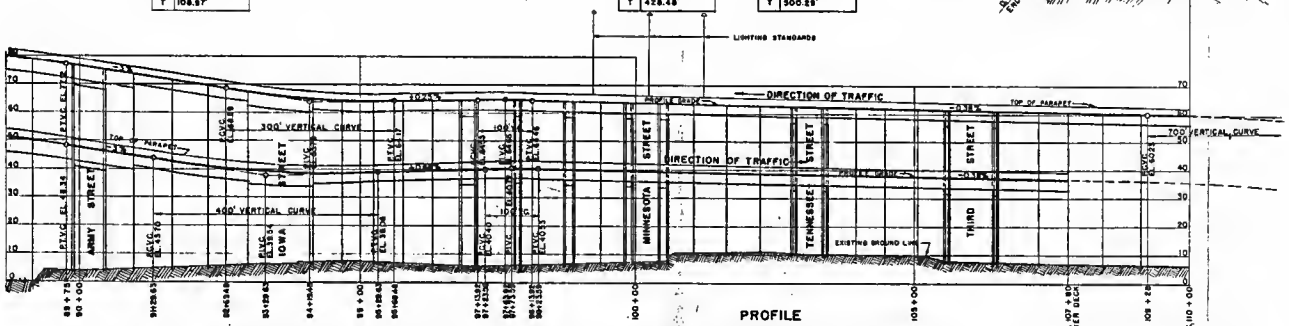


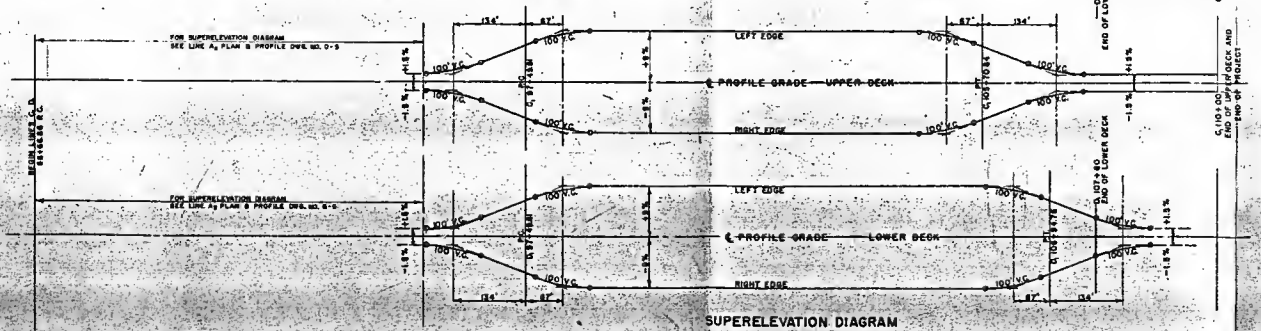
SECTION A-A AT 104 + 00

LINE C,D CURVE DATA	
Δ	9° 27' 00"
R	1292'
L	217.41'
T	108.97'

LINE C CURVE DATA	
Δ	40° 25' 00"
R	1154'
L	821.03'
T	428.48'

LINE D CURVE DATA	
Δ	49° 31' 00"
R	1154'
L	944.98'
T	500.28'





NOTES:

1. ALL ELEVATIONS REFER TO CITY DATUM.
2. FOR DETAILS OF RIGHT-OF-WAY SEE DWG NO R-10.
3. FOR LIGHTING DETAILS SEE DWGS NO. E-2 AND E-3.

SCALE

HORIZONTAL 1"=400'

VERTICAL 1"= 20'

CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

SOUTHERN FREEWAY

PLAN AND PROFILE

SOUTHERN CROSSING INTERCHANGE

DECEMBER 1955 DWG. NO. S-7

DE LEUW, CATHER & COMPANY - CONSULTING ENGINEERS - SAN FRANCISCO

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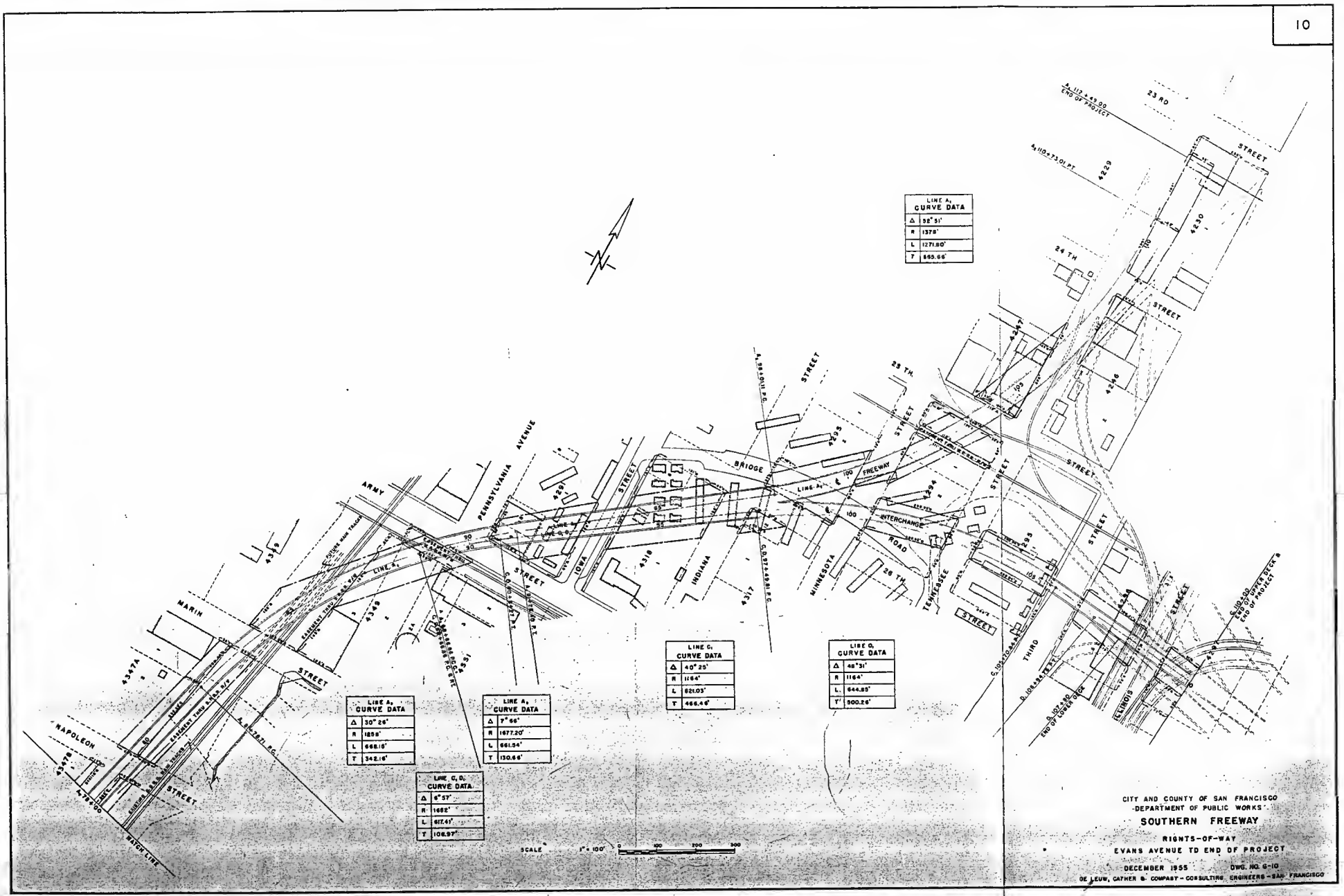

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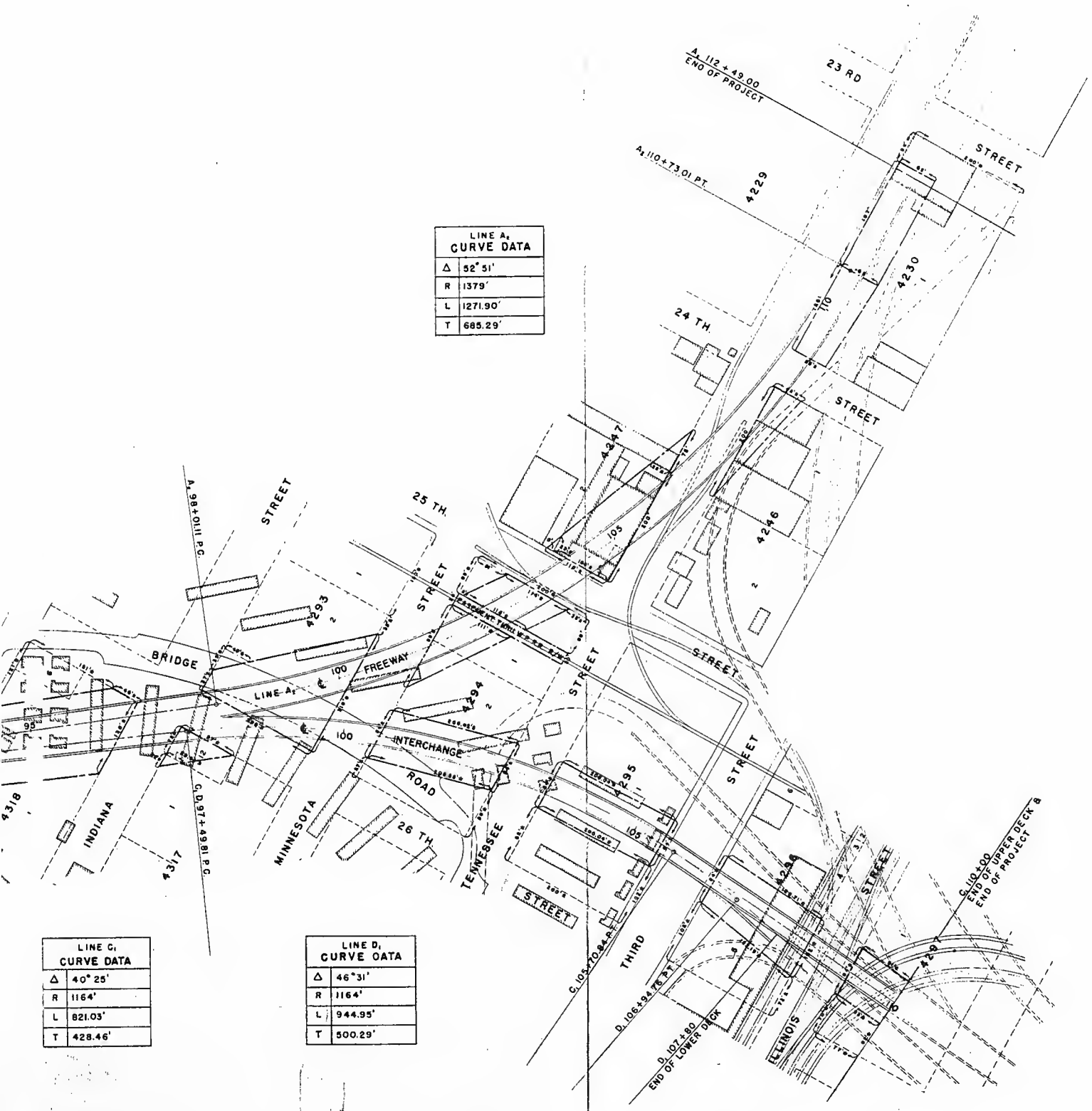


LINE A, CURVE DATA	
Δ	52° 51'
R	1379'
L	1271.90'
T	685.29'

LINE C, CURVE DATA	
Δ	40° 25'
R	1164'
L	821.03'
T	428.46'

LINE D, CURVE DATA	
Δ	46° 31'
R	1164'
L	944.95'
T	500.29'

100 200 300

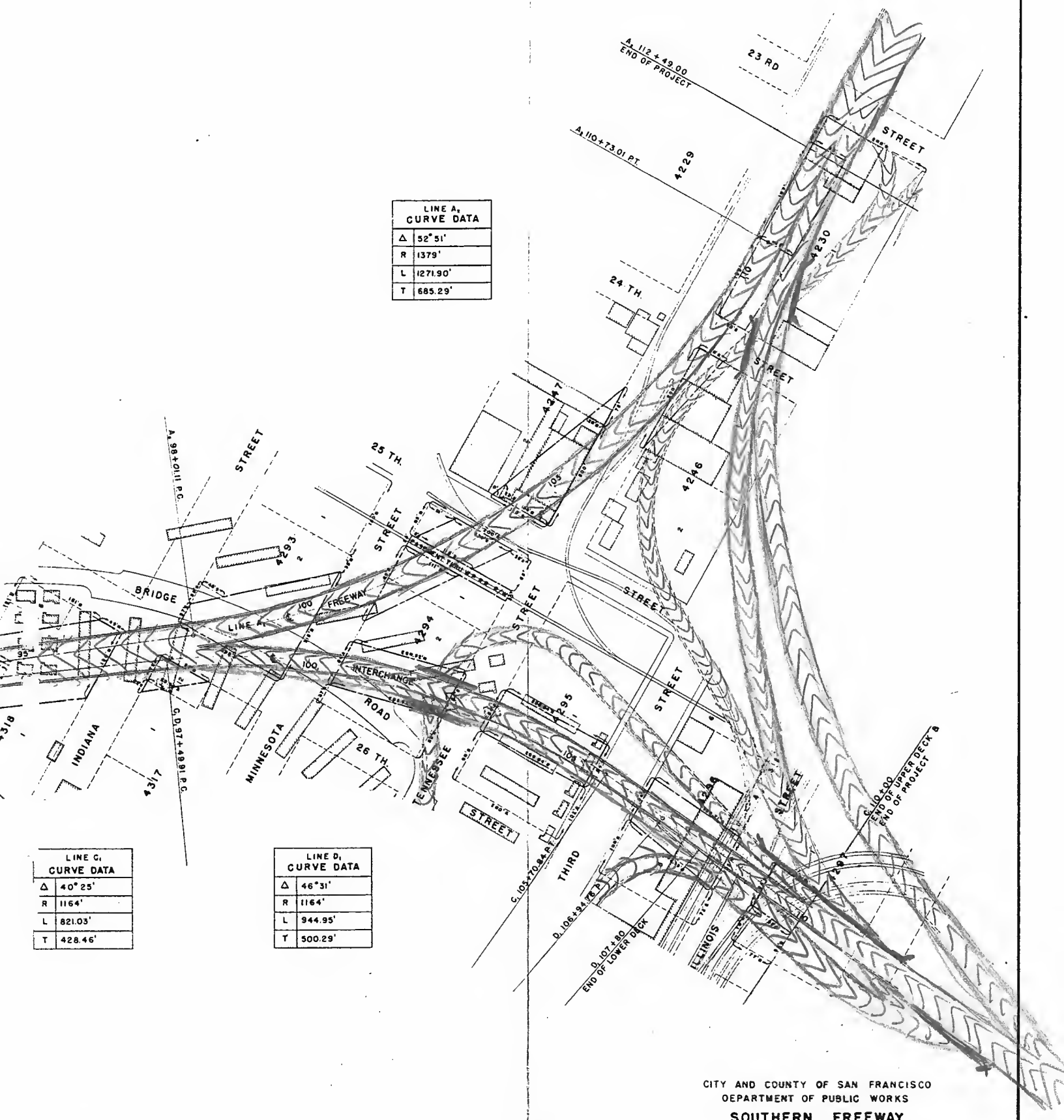
CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

SOUTHERN FREEWAY

RIGHTS-OF-WAY
EVANS AVENUE TO END OF PROJECT

DECEMBER 1955 DWG. NO. G-10

DE LEUW, CATHER & COMPANY - CONSULTING ENGINEERS - SAN FRANCISCO



CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

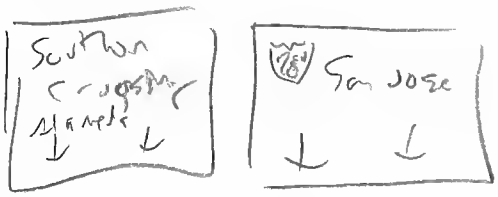
SOUTHERN FREEWAY

RIGHTS-OF-WAY
EVANS AVENUE TO END OF PROJECT

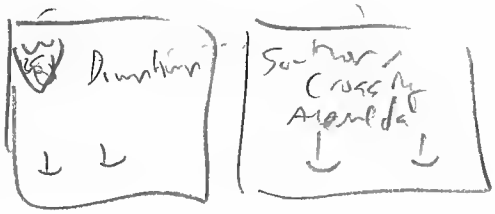
DECEMBER 1955 OWG. NO. G-10

DE LEUW, CATHER & COMPANY - CONSULTING ENGINEERS - SAN FRANCISCO

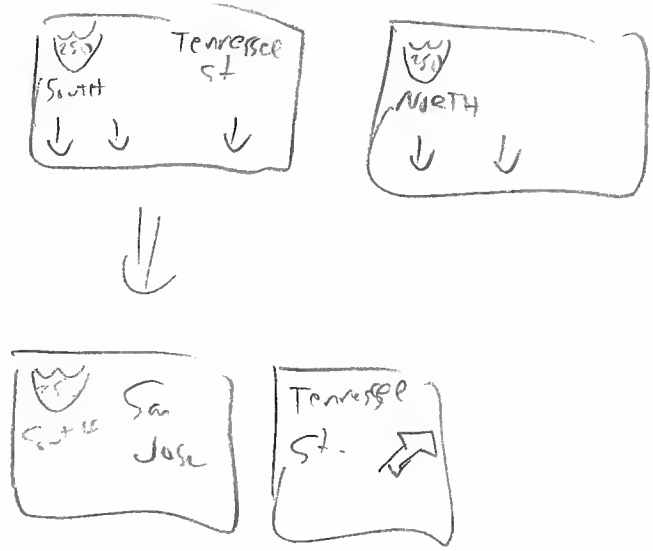
SB 280:



NB 280i

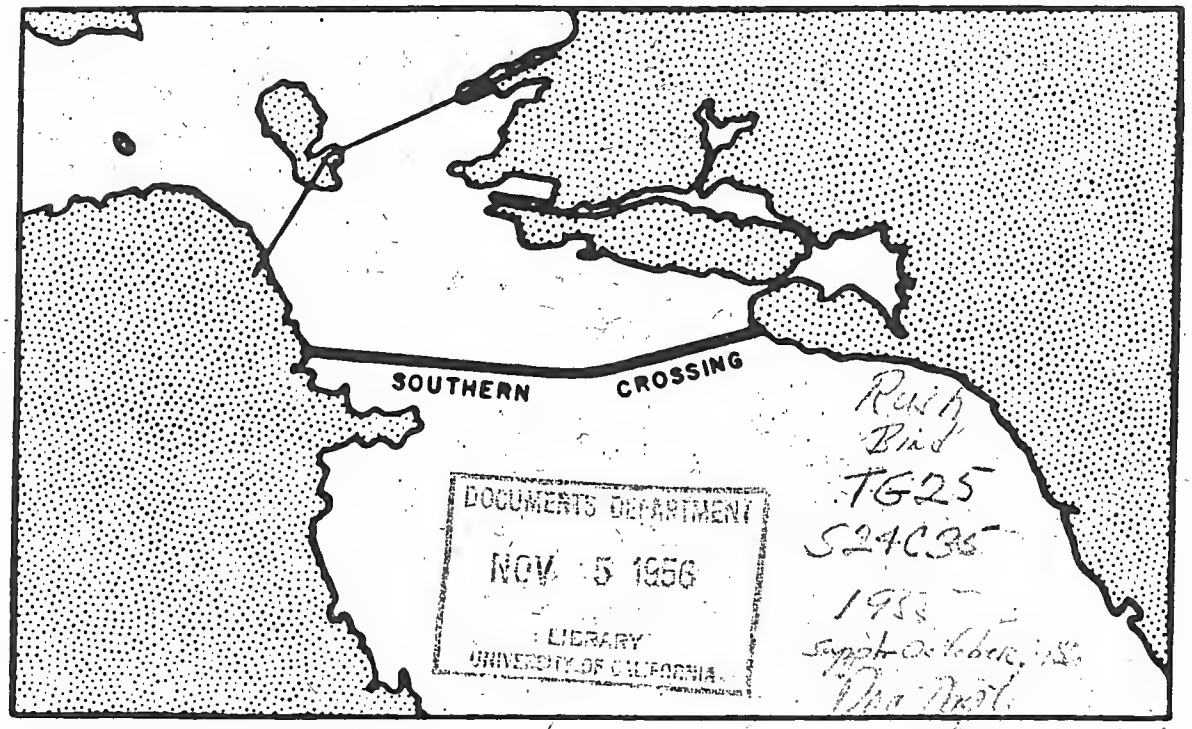


WB Southern Crossing.



SOUTHERN CROSSING

OF SAN FRANCISCO BAY



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DIVISION OF SAN FRANCISCO BAY TOLL CROSSINGS
DEPARTMENT OF PUBLIC WORKS
STATE OF CALIFORNIA

OCTOBER 1956

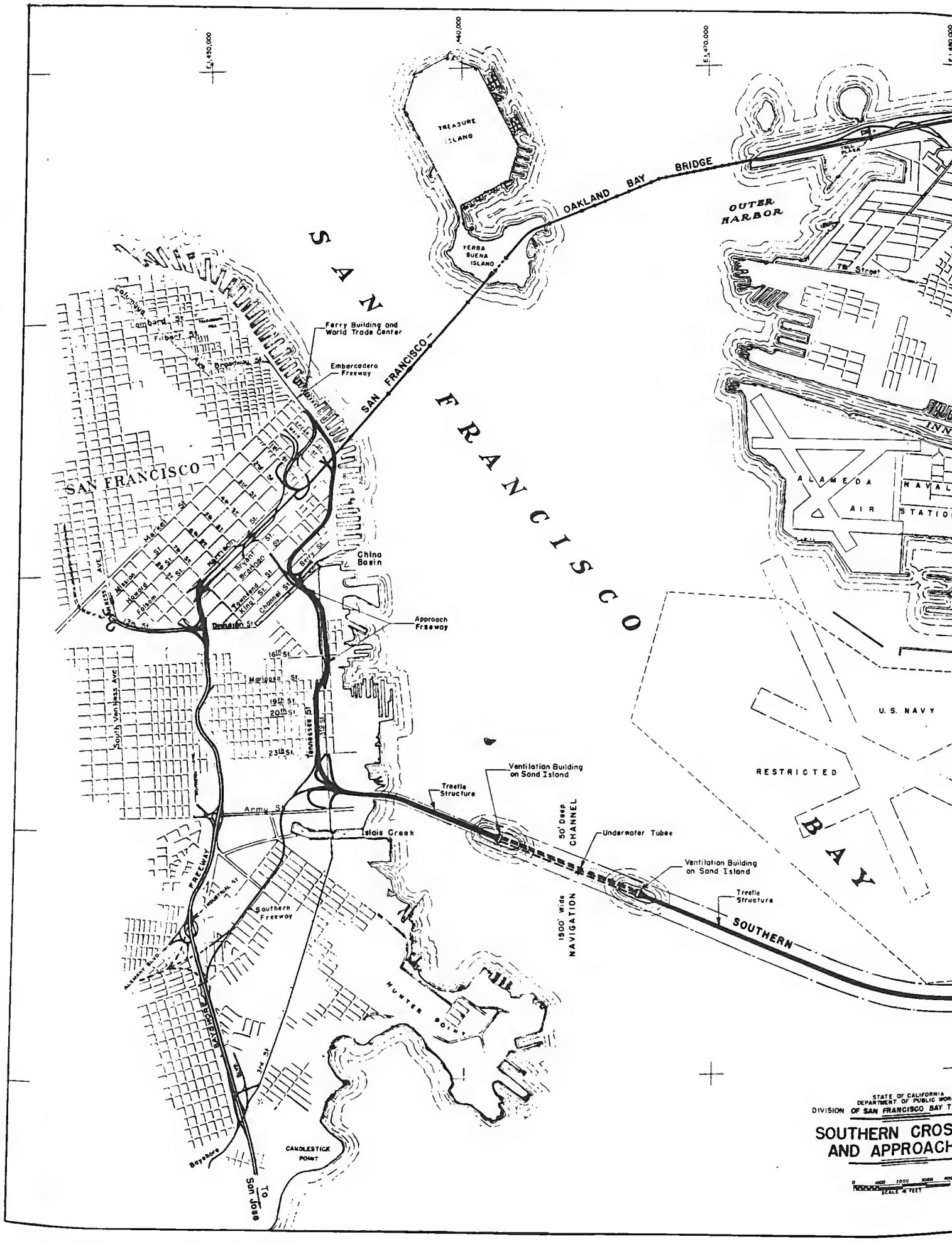
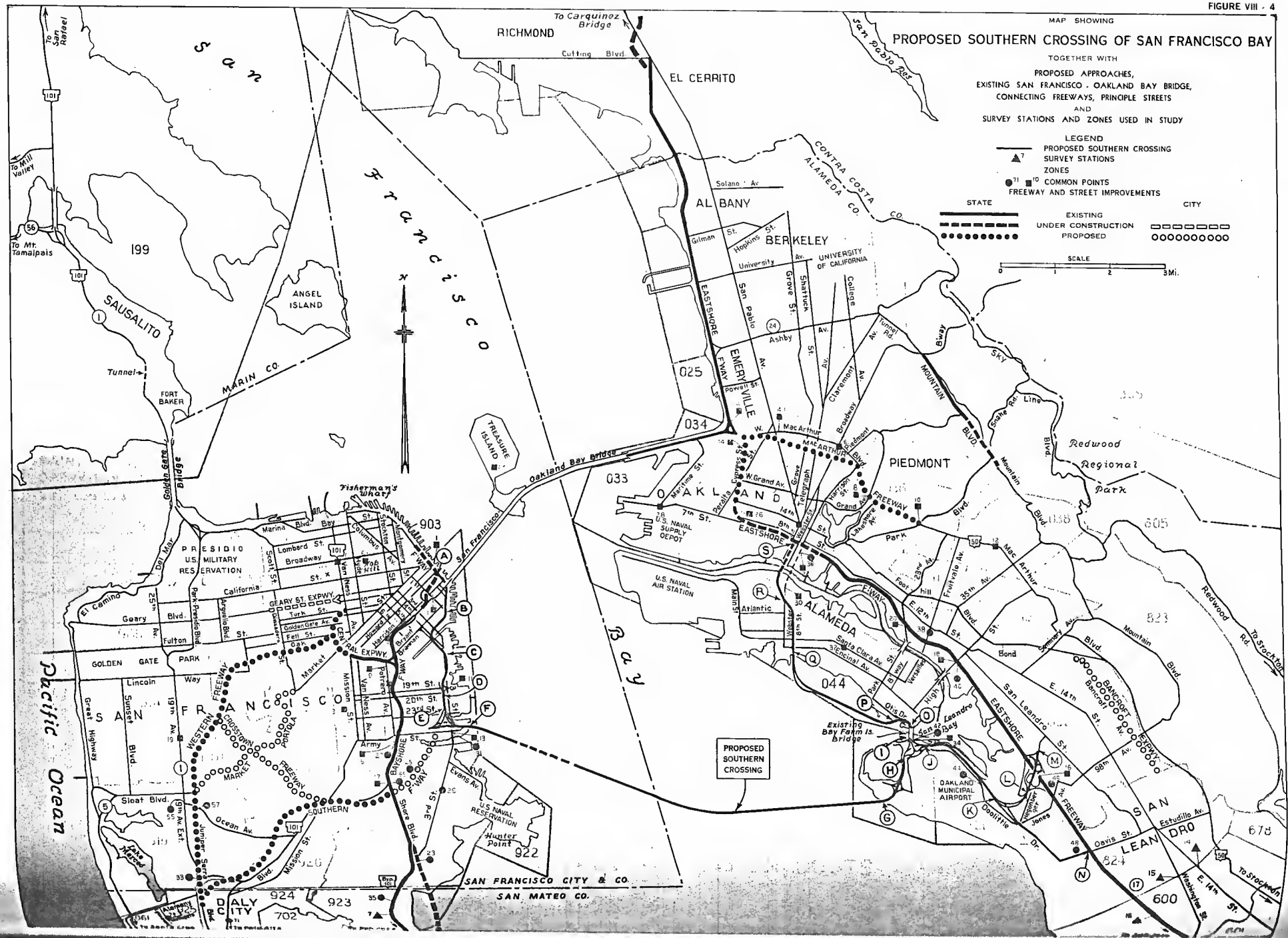
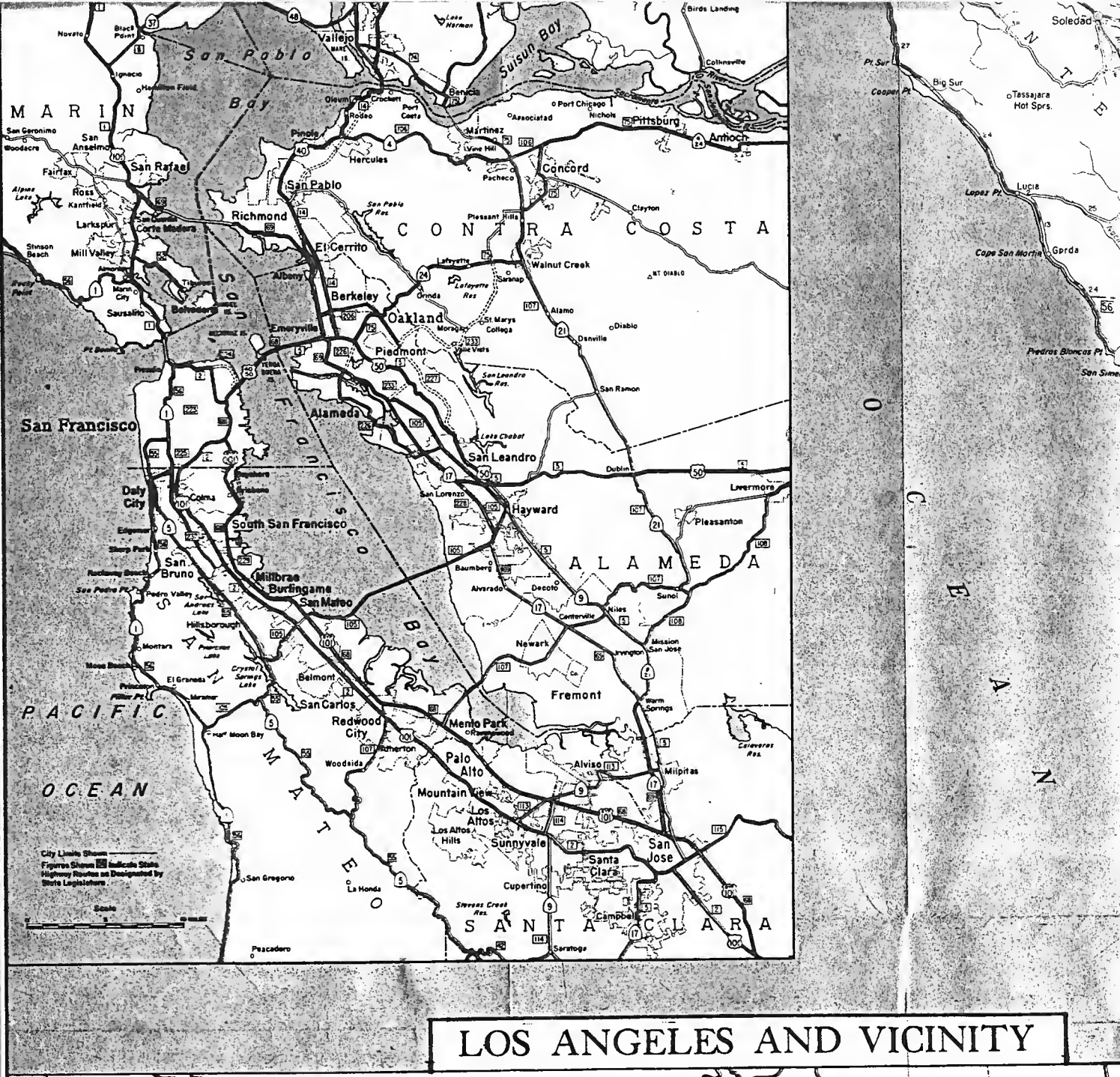

E) 450,000
E) 460,000
E) 470,000
TREASURE ISLAND
YERBA BUENA ISLAND
OAKLAND BAY BRIDGE
OUTER HARBOR
SAN FRANCISCO BAY
SAN FRANCISCO
Ferry Building and World Trade Center
Embarcadero Freeway
SAN FRANCISCO-
China Basin
Approach Freeway
Mariposa St
16th St
19th St
20th St
23rd St
Tennessee St
Army St
Islais Creek
Ventilation Building on Sand Island
Treetle Structure
50' Deep CHANNEL
Underwater Tubes
Ventilation Building on Sand Island
Treetle Structure
1500' wide NAVIGATION
SOUTHERN
U. S. NAVY
RESTRICTED
BAY
ALAMEDA
AIR
Southern Freeway
HUNTER POINT
CANDLESTICK POINT
Bayshore
To San Jose
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF SAN FRANCISCO BAY TOLL
SOUTHERN CROSSING
AND APPROACHES

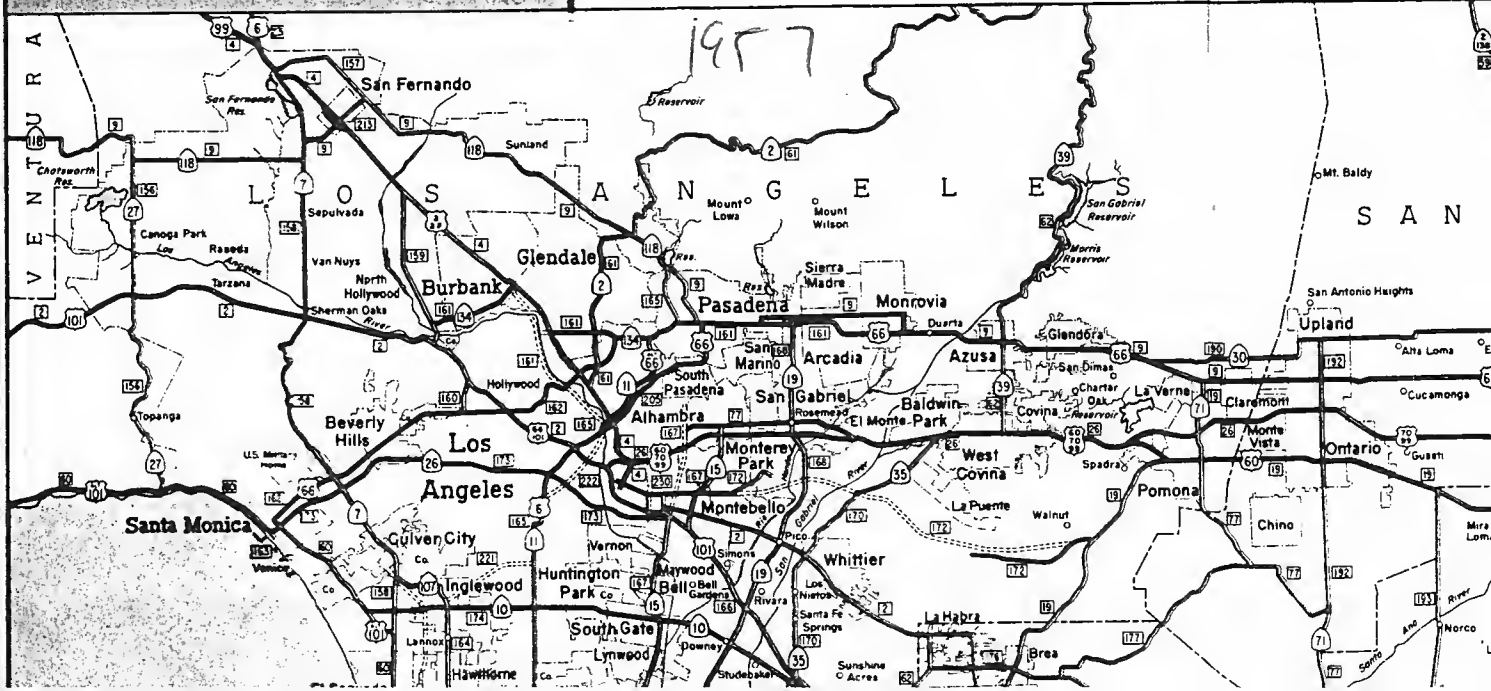
FIGURE VIII - 4

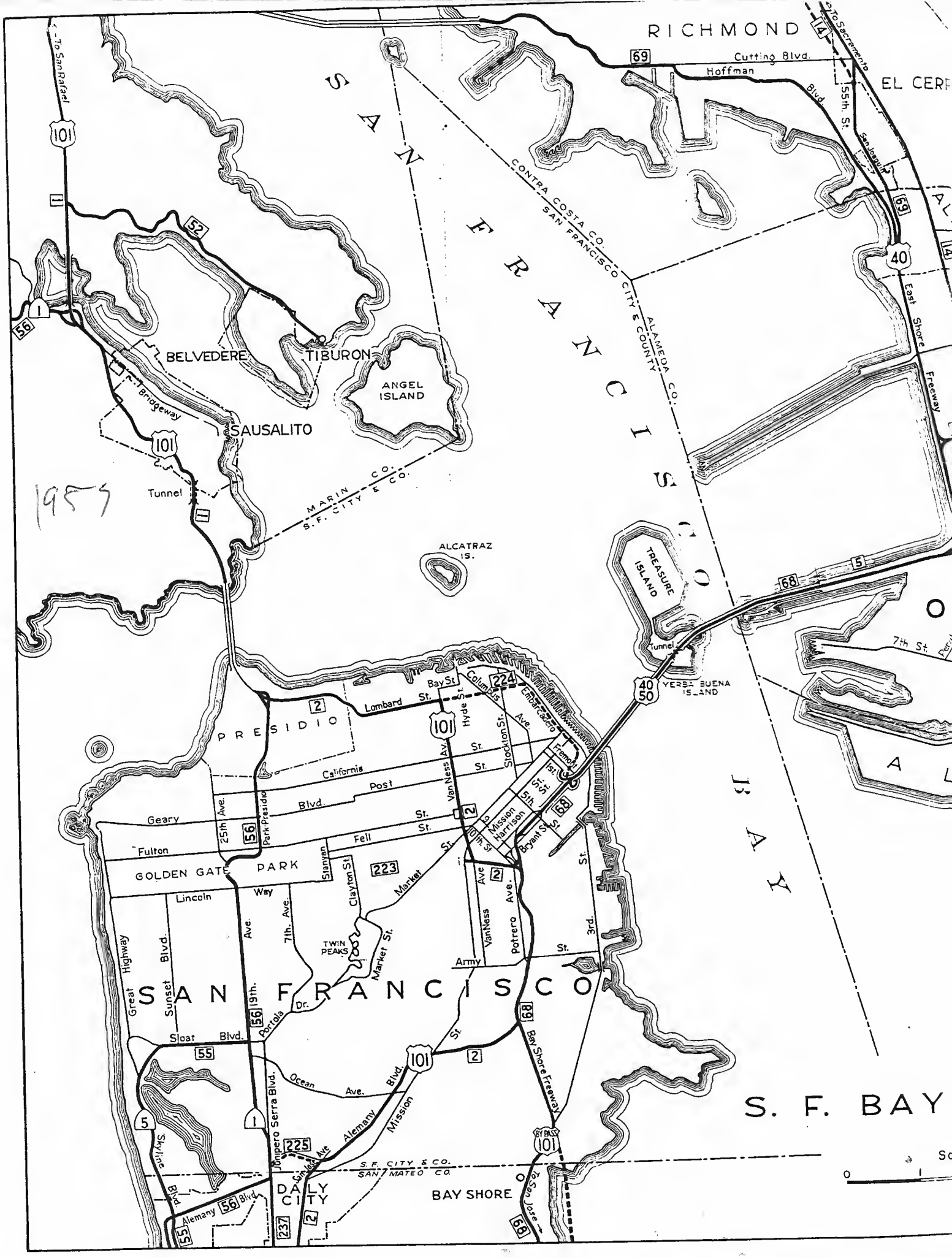




LOS ANGELES AND VICINITY

1957




RICHMOND
Cutting Blvd.
Hoffman Blvd.
55th St.
To Sacramento
EL CERR
CONTRA COSTA CO.
SAN FRANCISCO CITY & COUNTY
ALAMEDA CO.
East Shore Freeway
SAN FRANCISCO BAY
BELVEDERE
TIBURON
ANGEL ISLAND
Bridgeway
SAUSALITO
To San Rafael
Tunnel
MARIN CO.
S.F. CITY & CO.
1959
ALCATRAZ IS.
TREASURE ISLAND
YERBA BUENA ISLAND
Tunnel
7th St.
PRESIDIO
Lombard St.
Bay St.
Columbus
Embarcadero
Hyde St.
Stockton St.
Van Ness Ave.
California St.
Post St.
Geary Blvd.
Fulton St.
Fell St.
Oak St.
Mission
Harrison
Bryant St.
5th St.
Fremont
25th Ave.
Park-Presidio
GOLDEN GATE PARK
Lincoln Way
Sloat Blvd.
Great Highway
Sunset Blvd.
7th Ave.
19th Ave.
Portola Dr.
Clayton St.
Market St.
TWIN PEAKS
Market St.
Army St.
Potrero Ave.
3rd St.
Van Ness Ave.
SAN FRANCISCO
Ocean Ave.
Junipero Serra Blvd.
Alemany Blvd.
Mission St.
Skyline Blvd.
Bay Shore Freeway
S. F. BAY
S.F. CITY & CO.
SAN MATEO CO.
DALY CITY
BAY SHORE
To San Jose
0
1

A

PRELIMINARY REPORT

TO

DEPARTMENT OF PUBLIC WORKS

ON A

SAN FRANCISCO - TIBURON CROSSING

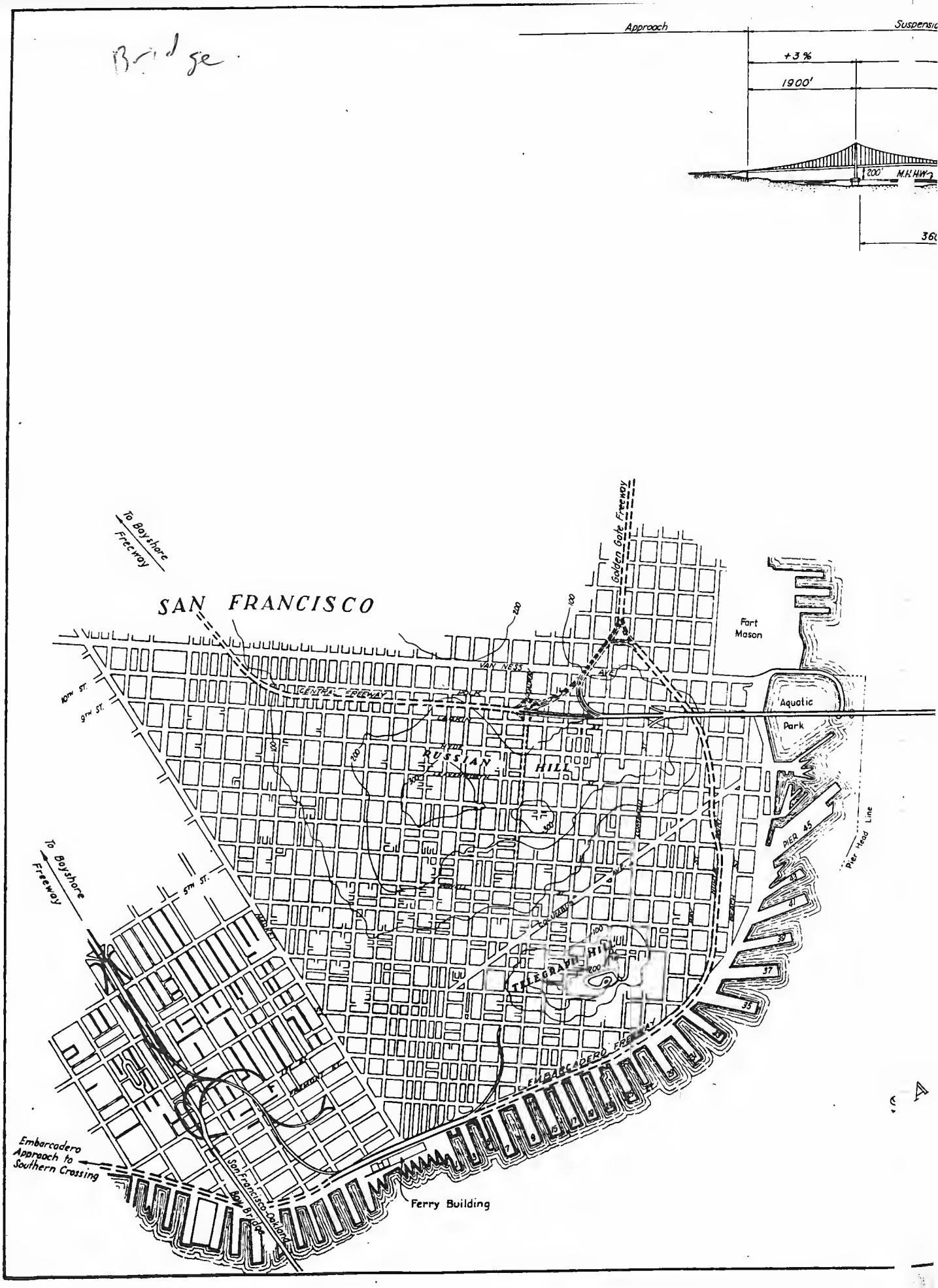
OF

SAN FRANCISCO BAY

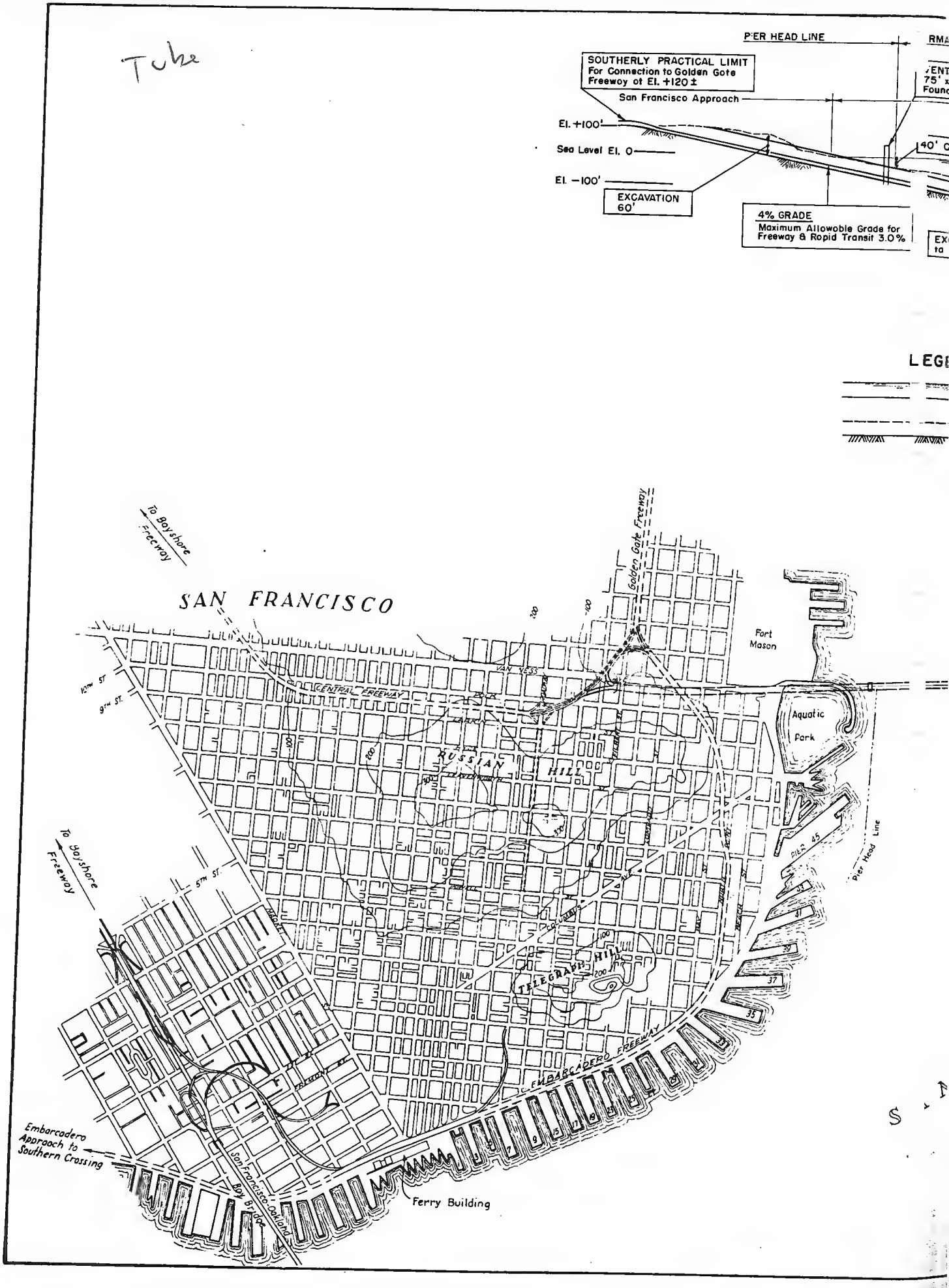
January 1957

Division of San Francisco Bay Toll Crossings
Department of Public Works
State of California

Bridge.


Approach
Suspensio
+3%
1900'
200'
M.H.W.
360
To Boyshore Freeway
SAN FRANCISCO
Golden Gate Freeway
Fort Mason
VAN NESS AVE.
CALIFORNIA FREEWAY
10TH ST.
9TH ST.
Aquatic Park
RUSSIAN HILL
PIER 45
Pier Head Line
To Boyshore Freeway
5TH ST.
TELEGRAPH HILL
EMBARCADERO FREEWAY
Embarcadero Approach to Southern Crossing
San Francisco-Oakland Bay Bridge
Ferry Building

Tube



PIER HEAD LINE
SOUTHERLY PRACTICAL LIMIT
For Connection to Golden Gate Freeway at El. +120 ±
San Francisco Approach
El. +100'
Sea Level El. 0
El. −100'
EXCAVATION 60'
4% GRADE
Maximum Allowable Grade for Freeway & Rapid Transit 3.0%
LEGE
To Bayshore Freeway
SAN FRANCISCO
Golden Gate Freeway
Fort Mason
Aquatic Park
VAN NESS
CENTRAL FREEWAY
RUSSIAN HILL
TELEGRAPH HILL
EMBARCADERO FREEWAY
PIER 45
Pier Head Line
10TH ST
9TH ST
5TH ST
To Bayshore Freeway
Embarcadero Approach to Southern Crossing
San Francisco-Oakland Bay Bridge
Ferry Building

Mar - Apr 1957

Freeways in District IV

Ten Years of Modern Highway Construction

By B. W. BOOKER,
Assistant State Highway Engineer

THE YEAR 1957 marks the conclusion of the first 10 years of freeway construction in the San Francisco Bay area. In singular coincidence, the closing of the decade witnesses the virtual completion of what might be considered the initial phase of freeway development in the nine counties of District IV. Approach to the metropolitan areas from the north, east and south will soon be served by four continuous freeway systems engineered to the peak of modern highway standards. Major portions of four other freeways will also be in service.

During 1956 there were 33 miles of freeway completed in District IV, making a total of 200 freeway miles now in service. Another 70 miles are presently under construction and by the end of 1957, it is expected that construction of another 25 miles will be under way. By the end of 1957 a continuous part of the Bayshore Freeway will be in service from the San Francisco-Oakland Bay Bridge to Palo Alto, a distance of 35 miles. On the other side of the bay, the last 0.9 mile of the Eastshore Freeway will be under construction in Oakland.

Continuous Freeway

When completed, a continuous freeway will be in service from San Jose through Oakland to the El Cerrito Overhead in Albany, a distance of approximately 44 miles, and another 13 miles is now under construction northerly to the new Carquinez Bridge. By the end of the year, a continuous freeway will also be in use from the Eastshore Freeway just north of San Lorenzo and Hayward to Tracy, a distance of 40 miles. Also being completed this year is the last of the major freeway projects required to provide a continuous freeway ride from the Golden Gate Bridge to Santa Rosa, a distance of 46 miles. Only the balance of the Greenbrae Interchange, a short length at the north city limits of San Rafael and a short section through Novato remain to be constructed in this entire stretch.

B. W. BOOKER

The total expenditures on freeways in District IV to date is approximately $465,000,000. Our construction and right-of-way programs totaled $19,000,000 in 1950, $65,000,000 in 1955, and will have increased to $75,000,000 in 1957-58, all of which is an indication of the accelerating tempo of freeway completions expected in the future.

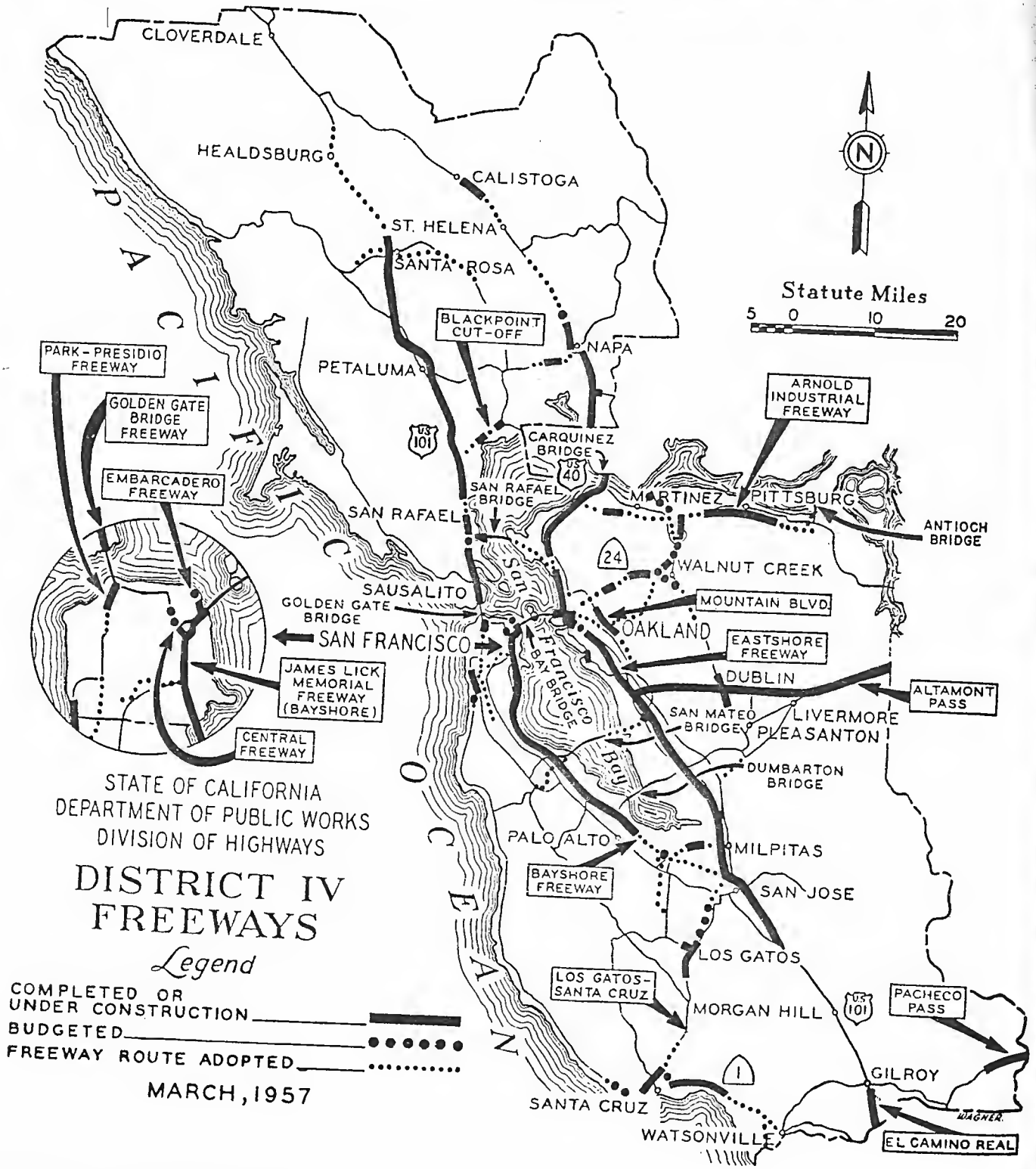
Since the opening of the first segment of the Bayshore Freeway in 1947, Burlingame Avenue to Peninsula Avenue in San Mateo County, short sections have been constructed as rapidly as funds have become available. The sequence was established by economic controls and the priority due to severity of deficiency. As the decade developed the planned pattern of continuity appeared and the completed sections now have merged into full freeway arterials.

Part of Past

This is now a part of the past. The problems of engineering and those of economic impact upon the areas affected by the physical presence of the right of way were relatively simple. With the exception of the Eastshore Freeway old alignments were largely used and the population of the involved areas had long since accepted the fact that highways are a public service and if traffic strangulation was to be avoided they had to be expanded and improved.

Most of the Eastshore Freeway, south of Oakland to San Jose, has been developed on new alignment through comparatively undeveloped lands. The many thousands of new homes lining each side of this freeway are a mute testimony of the value of high standard traffic service, not only to the alleviation of congested existing arterials, but to the development of areas farther and farther removed from metropolitan centers.

The story of the coming decade will be quite different. The planning of the system of freeways in the Metropolitan Bay area has been done in cooperation with the county and municipal authorities. From the outset the system has been based on the knowledge that but one freeway extending in each of the several direc-



tions from the central metropolitan cores would not be sufficient to handle the potentials of this great area. It has been well realized that other freeways offering similar directional movement but providing traffic service to and through many local areas of congestion somewhat removed from initial freeway developments will be required in the future. Accordingly, facilities such as the MacArthur Freeway and Junipero Serra Freeway have been foreseen in addition to the Bayshore and Eastshore Freeways.

With a present population of the Bay area exceeding 3,000,000 and an estimated increase to double that by

1975, it is not realistic to consider that freeways alone will be the answer. However, authorities in transportation all agree, that whatever form of additional transportation may be required in the future, the need for freedom of individual movement dictates that the system of freeways presently being planned and constructed must be provided and cannot be supplanted.

This is stated in several places in the Bay Area Rapid Transit Commission Report, and is included in their diagrams and bar charts illustrating the modes of travel. Quoted from page 37 of that report is the following:

First Requirement: A Regional Freeway Network.

"The existence of the very large group for whom only the private motor vehicle provides effective transportation dictates a strong highway system as the very first requirement in satisfying over-all transportation demand. Specifically, we consider that the known size of this group makes essential, as the first inter-urban transportation requirement, a regional arterial highway system of freeway-quality construction. Programming of such regional freeways in the Bay area is already well advanced, and the plans to carry these to completion must be strongly supported."

A large portion of the planned future construction will be essentially a paralleling of present freeway facilities, but farther removed from the bay. Entirely new routes through existing developed areas must be established to relieve the inevitable highway saturation which follows the growth of population and the resulting addition of vehicles. These new routes involve properties, the owners of which have heretofore had little reason to expect involvement in the highway problem. The intensity of the conflict of interests is exceeded only by the necessity of solution.

Public Opinion Important

Those responsible for highway progress are now and will continue to be faced with the necessity of extensive public explanation with respect to location of new facilities and the time table of their construction. The limitations of space make mandatory that additional property must be acquired for freeway development. The opposition of those whose personal interests are affected can be expected in regard to any proposed location. It is impossible to avoid all existing developments; however, there will be improvement in this respect in the future as advantages from extensive advance planning activities are realized.

Geography of the Bay area has established a core of industry and commerce in San Francisco and in the cities of the East Bay. The transportation pattern thus becomes one of convergence toward these areas. As the system grows it reaches farther and farther into the far corners of the area joining the similarly expanding facilities of the adjacent districts and affording the benefits derived therefrom. Other than safety and freedom of congestion on local roads and streets there are, of course, many more benefits to the motorist and general citizenry which cannot be easily evaluated though none the less real. Among these are stabilization or enhancement of property values, increasing the radius of area development from the inner core, increased access to recreational and cultural facilities, reduction in strain of driving, more expeditious movement of nonmotorists through use of freeways by express busses, lessening of costs of transportation for commodities. The monetary value of these benefits are huge as they are vital to the financial health and progress of the region. It should be borne in mind that conversely to the benefits occurring from good transportation if there were no freeways there would be the losses that the region would suffer without having them. In the words of former Commissioner of Public Roads, Thomas MacDonald, "We pay for good roads whether we have them or not; and we pay more if we don't have them than if we do."

It is with considerable satisfaction that the following more detailed review of progress and future plans for the development of the Bay area highway system is presented.

BAY BRIDGE TO SOUTH CITY LIMITS SAN FRANCISCO

Except for a short section southerly of Third Street which will be completed this summer as a part of the "open water" fill relocation south of the city limits, this six- and eight-lane freeway within San Francisco is now completed and opened to traffic. During the past year roadside development, ground cover, and erosion control projects amounting to approximately $250,000 have been completed between Third Street and 17th Street.

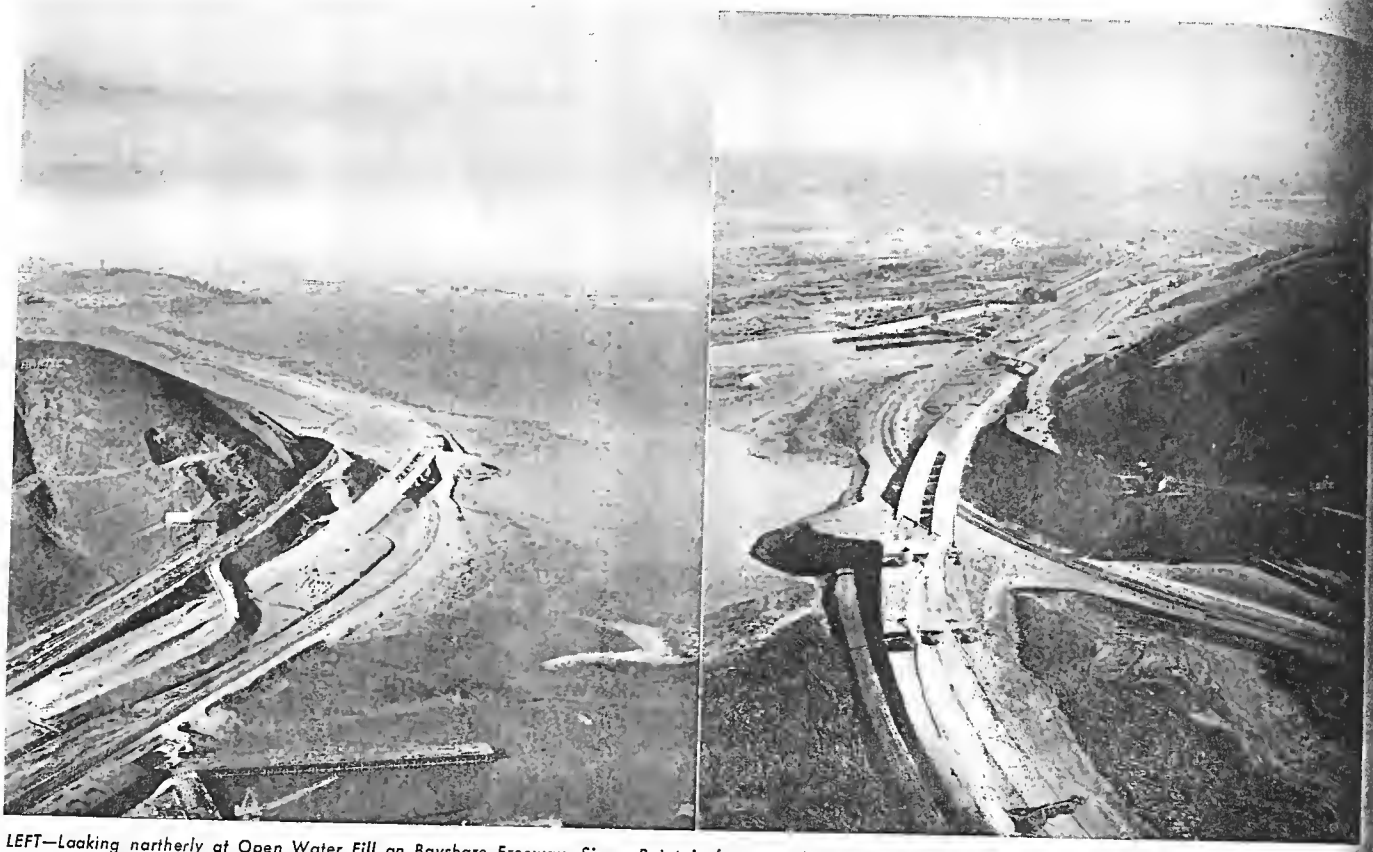
The 110,000 vehicle users traversing this scenic skyway daily are being afforded considerable relief from congestion and a savings in time and money. Considerably greater safety is also afforded these vast numbers of motorists all of whom were previously required to traverse congested city streets with attendant delay and high accident rates.

The construction cost of this portion of the freeway has been $20,300,000, exclusive of the open water fill project.

SOUTH CITY LIMITS SAN FRANCISCO TO PALO ALTO

At the end of 1957 or early 1958 this part of the freeway will be virtually complete. At that time there will be a continuous initial six-lane future eight-lane facility for 35 miles southerly to Palo Alto. Completion of this entire stretch is now dependent on the finishing of four projects now under construction.

Underway at this time and nearing completion is the last contract on the open water project between Third Street in San Francisco, across an arm of the bay between Candlestick Point and Sierra Point, and tying into the completed freeway near Butler Road. This project, consisting of drainage and paving was awarded to L. C. Smith at a cost of $1,450,000. Two and two-tenths miles of this four-mile project are over open water resulting in a shortening of 0.4 mile over that traveled on the existing highway. Work is expected to be completed this summer allowing full use of this six- and eight-lane freeway resulting



LEFT—Laaking nartherly at Open Water Fill an Bayshare Freeway. Sierra Paint in faregraund and Candlestick Paint ahead. Nate narth-baund aff-ramp ta existing highway in faregraund. RIGHT—Bayshare Freeway canstructian at Sierra Paint laaking sautherly. Nate S. P. R. R. relacatian. Tunnel right center eliminated.

in a time savings of as much as 20 minutes to the many vehicle users who travel this route during peak hour periods. Previous work on this project was performed under six contracts including grading along with drainage structures and construction of experimental embankments to displace the highly fluid bay mud which reaches a maximum depth of 70 feet in this area.

From the south end of the open water project at South San Francisco to Bransten Road, just north of Redwood City, the freeway has been completed and in operation for some time. This work started in 1946 and was finished with the completion of the southernmost contract in 1955.

The remaining eight miles from Bransten Road to the Santa Clara county line was broken into four projects. The first of these projects was the Willow Road interchange which was finished last year by L. C. Smith as the contractor at a cost of approximately $850,000. This project had been selected for first construction to eliminate a very congested intersection.

The second and third contracts covered the balance of the work between 0.4 mile north of Marsh Road and the Santa Clara county line. Chas. L. Harney, Inc., was low bidder on both contracts. Their combined cost is $3,770,000 and they are scheduled for completion this year.

The last of the four contracts to be finished will be the 3.8 miles relocation between Bransten Road and the junction with the above contracts at 0.4 mile north of Marsh Road. This $5,550,000 contract was advertised in October, 1956, and was awarded as a joint venture to Piombo Const. Co., M & K Corp., and Connoly and Pac. Co. The expected date of completion is in the early spring of 1958.

EMBARCADERO FREEWAY

Construction was started on the first portion of this multilane elevated freeway by MacDonald, Young and Nelson & Morrison, Knudsen Company in May of 1955. This 0.9-mile-long single and double-decked project is estimated to cost $5,700,000. The second contract providing for a two-lane single-level structure for Oakland-bound traffic and the extension of the freeway to Howard Street with a four- and six-lane two-level structure was started in March of 1956. The contractor on this 1.2-mile section is Charles L. Harney, Inc., and it is estimated that the cost will be approximately $2,000,000. When completed this spring, these two units will serve as a connection between the Skyway and Bay Bridge to Mission Street at Main and Beale Streets in San Francisco.

Also under construction at this time is the third link in this freeway system extending it 1.2 miles from Howard Street, past the Ferry Building to Broadway and Sansome Streets. Completion of this $7,800,000 contract is not expected until sometime in the spring of 1959. Charles L. Harney,

Inc., is also the contractor on this two-level freeway.

Studies for the future extension of this freeway are in the early stages.

PALO ALTO TO SAN JOSE

Included in the 1957-58 construction program is a 1.1 miles long section of freeway at Moffett Field north of Mountain View between Stevens Creek and Ellis Street. Plans call for the construction of four lanes of the ultimate eight-lane freeway and construction of a full four-quadrant cloverleaf with bus stop facilities at Moffett Boulevard. Cost of this project is estimated at $1,100,000 and work should begin early this year. Construction of this project was expedited in order to eliminate a very congested intersection at which accidents were becoming increasingly numerous and severe.

From Palo Alto to Rosa Street north of San Jose, design plans are well advanced and it is anticipated that further improvements of this important freeway will be continued as rapidly as availability of funds and priority of other worthwhile projects will permit.

SAN JOSE TO SAN BENITO COUNTY LINE

A project which eliminates the last of the three-lane portion of this route by providing an initial four-lane, future six-lane freeway from the present junction of Sign Route 17 to

Embarcadero Freeway construction in progress on single and double decked structures. West approach to the Bay Bridge at bottom. Main and Beale Street connections in center.

Santa Clara Street is nearly complete. This project is 1.6 miles long and will cost $1,800,000. It is anticipated that work will be finished in the late spring of this year. This contract is being performed by Lew Jones and Leo F. Piazza. An interchange has been completed at McKee Road eliminating another source of accidents and a new underpass beneath the Western Pacific Railroad is nearing completion.

South of Santa Clara Street to Ford Road, an expressway has been in operation since 1947. Eventually it is expected that intersections at grade will be replaced by interchanges.

From Ford Road to south of Gilroy, the last of the three-lane width through this area was eliminated by expanding to a four-lane divided section. Work on the last portion of this expansion, from Ford Road to Llagas Creek, was performed by Carl N. Swenson, at a cost of $515,700 and was completed in March of 1956.

South of Gilroy to the San Benito county line, 5.8 miles of four-lane highway (future six-lane freeway), costing $935,000, have been in operation since early 1951.

SAN FRANCISCO—CENTRAL FREEWAY

The first portion of the Central Freeway, locally called Skyway, extending from the James Lick Memorial Freeway along 13th Street to South Van Ness Avenue and Mission Streets, was completed and opened to traffic in 1955.

The second section of this freeway extending from South Van Ness Avenue to Turk Street is included in the 1957-58 construction program and it is expected that this project will be under construction early this summer. This one-mile-long section of the skyway will be a two-level elevated viaduct with the three southbound lanes carried over the three northbound lanes and both directions of travel will be elevated over the city streets, leaving them clear to handle the cross traffic movements. The cost is estimated at $7,800,000.

Planning toward the eventual extension of this freeway is in the preliminary stage.

UPPER—US 101 Bypass east of San Jose looking southerly. Completed McKee Road interchange in center. End of project at Santa Clara Street diamond interchange in background. LOWER—US 101 Bypass-McKee Road interchange looking north. Western Pacific Railroad underpass at top center.

SOUTHERN FREEWAY

With virtual completion of the James Lick Memorial Freeway (Bayshore) in San Francisco, and as the most needed units of the Embarcadero and Central Freeways are now in the design and construction stages, planning has been directed to other near future segments of the much needed integrated San Francisco system.

Planning studies for an eight-lane freeway following generally along Alemany Boulevard between Junipero Serra Boulevard, near the south city limits of San Francisco, and the James Lick Memorial Freeway (Bayshore) are complete. Numerous public informational meetings as well as a public hearing before the Highway Commission were held and on June 21, 1956, this portion of the route was adopted and declared a freeway. Design studies are being expedited and an indication of near-future construction is the extensive purchasing of rights of way which to date are approximately 35 percent complete. Considerable funds have been allocated for the continued purchasing of rights of way in the 1957-58 fiscal program. The construction cost of this 4.3-mile length is estimatd at $17,000,000.

The City of San Francisco is well advanced with their plans for the extension of this freeway to a junction with the proposed Southern Crossing and Embarcadero Freeway in the vicinity of Third and Army Streets.

GOLDEN GATE FREEWAY

Plans are nearing completion on a $7,000,000 project covering 1.3 miles between Lyon Street and the Park Presidio Freeway at the southerly end of the Golden Gate Bridge. Work will consist of adding two lanes to make a total of eight lanes as well as revising the ramp connections at the interchange.

WESTERN FREEWAY

Studies for the Western Freeway are still underway and alternate locations are being investigated and compared.

SKYLINE BOULEVARD, SAN MATEO-SAN FRANCISCO COUNTIES

In December, 1954, a 2.3-mile portion of expressway on Skyline Boulevard between Edgemar Road and Alemany Boulevard was placed in service.

In July, 1955, continuation of the expressway northerly of Alemany Boulevard 1.3 miles to the south city limits of San Francisco was started under a contract awarded to Charles L. Harney, Inc. This project cost approximately $350,000. Concurrently, also under construction by Charles L. Harney for the City of San Francisco was the 1.0-mile portion north of the city limits to Lake Merced Boulevard, also as an expressway and costing $350,000. Both projects were opened to traffic on March 15, 1956.

These Skyline Boulevard projects provide another major connection to and within San Francisco from the rapidly developing residential areas in San Mateo County along the Skyline and coastal routes.

Additional all weather usage of this facility is expected after the construction of the link between Edgemar on the coast route (Sign Route 1) and Skyline Boulevard at Edgemar Road. This 2.2-mile link, to be constructed at an estimated cost of $1,500,000 includes grading, surfacing and structures to provide a four-lane expressway. This project replaces the two-lane coastal road now serving north of Edgemar but which has been subjected to numerous closures due to wet weather slides. Maintenance problems encountered have been difficult and costly. Under the present accelerated construction program this section was included in the 1957-58 Budget and advertised for bids on March 25, 1957.

JUNIPERO SERRA FREEWAY

In July, 1956, Joint Highway District 10 was dissolved and the Legislature designated the constructed portion of this route as State Highway Route 237. The Highway Commission adopted the existing facility from Route 56 in Daly City to Crystal Springs Road in San Bruno, and declared it to be a freeway. Subsequently, under a contract now underway, a portion of this four-lane divided expressway has been repaved and the major intersection at Hickey Boulevard is being signalized and channelized. Lowrie Paving Company is the contractor and completion is expected by May, 1957. It is anticipated that this route will be developed to full freeway standards in the future.

In February, 1957, the Legislature designated Route 239 as being from a point on Route 56 near Daly City to Route 2 near San Jose. Planning studies are nearly complete, meetings will be held with local authorities and it is expected that by early summer of this year, meetings informing the public of the various routes studied will be held. Later, after the public has had opportunity to consider the studies and to voice opinions, public hearings are anticipated. Until such time, the location for this additional freeway, serving San Francisco and the Peninsula to the south, will not be determined.

SAN MATEO COUNTY—19TH AVENUE FREEWAY

Planning studies have been completed for the development of an initial four-lane, future six-lane, freeway as Route 105 extending from Sign Route 5 (Skyline Boulevard), west of San Mateo, to the west end of the San Mateo Bridge across San Francisco Bay, a total distance of 7.2 miles. (For the past several months the public has been considering the proposed future development, and the State Highway Commission at its March meeting adopted a routing and declared it a freeway.

SANTA CLARA COUNTY—SIGN ROUTE 9 FREEWAY

On October 18, 1956, the Highway Commission adopted the routing for a future freeway location for Sign Route 9 from Bayshore Freeway north of Moffett Field, generally following Stevens Creek to an existing Sign Route 9 location north of Azule. Design studies for this future facility are now underway.

Mar - June 1957

Embarcadero

First Unit of New San Francisco Freeway Open

THE FIRST unit of the Embarcadero Freeway in San Francisco was opened to public traffic at 11.30 a.m., Monday, April 8, 1957.

Ceremonies celebrating the occasion were held at Beale and Mission Streets under joint auspices of the Downtown Association of San Francisco and the San Francisco Chamber of Commerce. Officials of the City and County of San Francisco, the State, members of the California Highway Commission and the Legislature and local civic groups participated.

Among the speakers were: Roy N. Buell, President of the Downtown Association, who presided; State Director of Public Works Frank B. Durkee, who also is chairman of the Highway Commission; Supervisor Henry R. Rolph, representing Mayor George Christopher; State Senator Robert I. McCarthy, Chief Administrative Officer Thomas A. Brooks, B. W. Booker, Assistant State Highway Engineer; Chamber of Commerce President E. D. Maloney, former Speaker pro-tem of the Assembly Tom Maloney, and Highway Commissioner Robert Bishop of Santa Rosa. Music was furnished by the San Francisco Municipal Band. The ribbon stretched across the freeway was cut by Supervisor Rolph.

B. W. Booker, Assistant State Highway Engineer, at microphone

The new unit will become an integral part of the San Francisco Skyway and with its downtown connections to Mission Street at Main and Beale Streets, will bring East Bay and Peninsula traffic closer to the heart of the city. The double deck reinforced concrete structure provides an extension of the James Lick Memorial Freeway (Bayshore Freeway), with opposing traffic moving on separate levels. Traffic from the East Bay will be handled on the lower deck of a parallel structure.

The reverse traffic movement from Mission Street to the Bay Bridge and East Bay points will not be opened until the completion of a subsequent contract this summer. All of the original ramps will continue to serve traffic.

The California Highway Commission allotted $5,400.000 for this initial project and work began early in 1955 by the contractors, McDonald, Young & Nelson Company and Morrison-Knudsen Company. The contract included 45.000 cubic yards of concrete, 73,650 lineal feet of steel piling and 13,000.000 pounds of bar reinforcing steel.

The double deck construction on this project was designed to afford

. . . *Continued on page 63*

Supervisor Henry R. Rolph wields scissors to cut ribbon after Embarcadero Freeway dedication, while state, county, and city officials, representatives of civic groups and of the police and fire departments cheer

RECORD TOTAL GAS TAX REVENUES TO CITIES

Continued from page 62 . . .

City	6/8$ Gas Tax	Engineering	Total
TULARE COUNTY			
Dinuba	$16,771.04	$2,000	$18,771.04
Exeter	12,868.71	1,000	13,868.71
Lindsay	16,968.78	2,000	18,968.78
Porterville	24,108.23	2,000	26,108.23
Tulare	40,948.15	3,000	43,948.15
Visalia	42,891.78	3,000	45,891.78
Woodlake	7,801.66	1,000	8,801.66
Total	$162,368.25	$14,000	$176,358.25
TUOLUMNE COUNTY			
Sonora	$7,563.66	$1,000	$8,663.66
VENTURA COUNTY			
Fillmore	$14,698.96	$1,000	$15,598.96
Ojai	12,142.63	1,000	13,142.63
Oxnard	89,228.21	6,000	95,228.21
Port Hueneme	24,402.67	2,000	26,402.67
San Buenaventura	73,903.68	6,260	79,163.68
Santa Paula	35,871.39	3,000	38,871.39
Total	$250,147.54	$18,260	$268,397.64
YOLO COUNTY			
Davis	$18,692.84	$2,000	$20,692.84
Winters	6,159.84	1,000	6,169.84
Woodland	35,761.19	3,000	38,761.19
Total	$69,613.87	$6,000	$65,613.87
YUBA COUNTY			
Marysville	$24,180.19	$2,000	$26,180.19
Wheatland	1,813.67	1,000	2,813.67
Total	$25,993.86	$3,000	$28,993.86
GRAND TOTAL	$28,219,354.63	$1,000,125	$29,219,479.63

EMBARCADERO

Continued from page 46 . . .

maximum service to motorists with a minimum right of way space for the route. It will also provide more safety for the traveling public by the separation of the two directions of traffic.

Two additional projects are presently under way as parts of the Embarcadero Freeway. The portion from Fremont to Mission Street is estimated to be completed about the first of July, 1957, at a cost of $1,753,545 and the extension to Broadway at Vallejo Street by the fall of 1959, at a cost of $7,800,000. Charles L. Harney, Inc., is the contractor on both of these projects.

The downtown connections, or ramps, will serve as the terminal of the freeway until the fall of 1959 when the extension of the freeway along the Embarcadero to Broadway at Vallejo Street is scheduled for completion. Thus, some congestion during peak hours is anticipated at the terminal pending completion of the extension. However, the congestion at the present northbound off-ramp at Fourth and Bryant Streets and at the First Street off-ramp should be considerably relieved.

OROVILLE-MARYSVILLE

Continued from page 30 . . .

The southerly end of the Feather River Highway Relocation will join this project at the Montgomery Street connection.

The proposed improvement is a step in the development of this portion of US Alternate 40 to full freeway status. It is in keeping with the planned over-all development of this highway.

The 1957-58 state highway budget contains $750,000 for this project.

WEAVERVILLE

Continued from page 61 . . .

for several years but upon which work actually started last year, have given a great impetus.

Around 40 million dollars worth of contracts have been awarded for roads, camps and tunnels. Work has been started on all of these items. Later the Bureau of Reclamation advised that the contract for the Lewiston Dam was let for 49 million dollars.

Weaverville is considering incorporation and is planning to install a sewer system. Lewiston, near the dam, is booming and growing like a boom construction town, which it is. Motels are being built, even miles away from the dam. On every side there are signs of progress and development.

HENRY L. MAHONEY

Continued from page 50 . . .

Chief Clerk in the Headquarters Office in 1937, a position which he held for 20 years.

During his career Henry has participated in the tremendous growth of the State Highway System to the point where today average weekly expenditures have surpassed the amount formerly expended in one year when he began state service.

A dinner party honoring Henry's retirement was attended by his family and many friends throughout the organization on April 25th at the University Club.

"Hank" plans to maintain his home in Sacramento but has not formulated any definite plans as to how he will spend his well-earned retirement time.

The Division of Highways extends to him and Mrs. Mahoney congratulations and best wishes for many happy years of retirement.

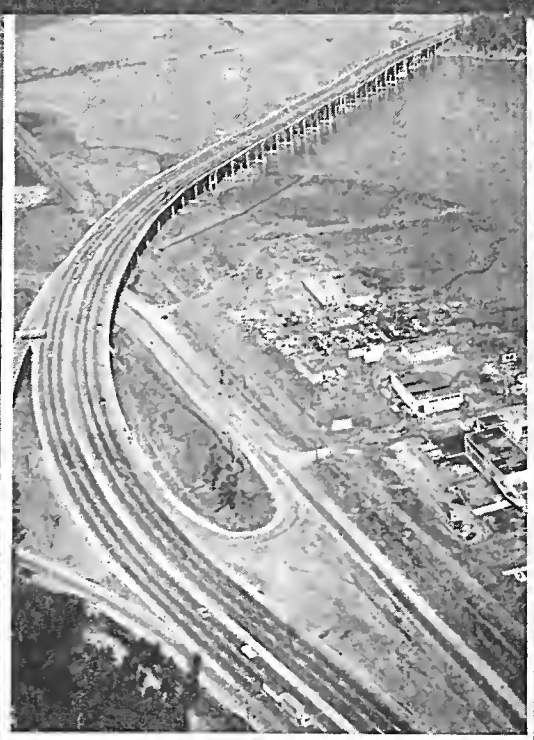
AUTO INDUSTRY SPENDS RECORD BILLIONS

Motor vehicle and parts manufacturers, anticipating the growing market of the future, spent an estimated $1,863,000,000 during 1956 on new plants and equipment.

Since World War II, points out the National Automobile Club, the industry has spent 9.7 billion dollars on plant expansion and new equipment. Expenditures climbed steadily from 349 million in 1949 to 1.3 billion in 1956, then dropped slightly before the 1956 budget allocations.

MAKE ALLOWANCES

If you want to drive safely, do not be satisfied merely to do everything you ought to do. You should make allowances for the unexpected and for the mistakes and misjudgments of other drivers. The California State Automobile Association says the best motorists drive defensively.



Mar - Apr 1958

Report From District IV

Pushed Toward Completion Bay Area Freeway Network

By B. W. BOOKER
Assistant State Highway Engineer

THE POPULATION of the nine counties in District IV (Sonoma, Napa, Marin, San Francisco, Contra Costa, Alameda, San Mateo, Santa Clara and Santa Cruz) has increased from 2,500,000 in 1947 to 3,200,000 in 1957. It is expected that by 1970 the population of the area will increase to nearly 5,000,000. During the past 10 years automobile registration has increased over 80 percent. The ratio of persons per vehicle has been steadily declining to a present 2.3 persons per vehicle within the metropolitan area and less within the rural areas.

Many new areas, both residential and commercial have been developed; new cities have been formed and others will be required in the future. The growth in population and automobiles in the nine counties has introduced many problems, not the least of which is transportation.

The task of providing a transportation system to serve the needs of the dynamic increases in population and area development is a tremendous one. It requires the development of all forms of transportation which contribute to the solution of the problem.

It is the State Highway's responsibility to provide the network of freeways and major highways which are an essential component of the integrated transportation system required to serve this area.

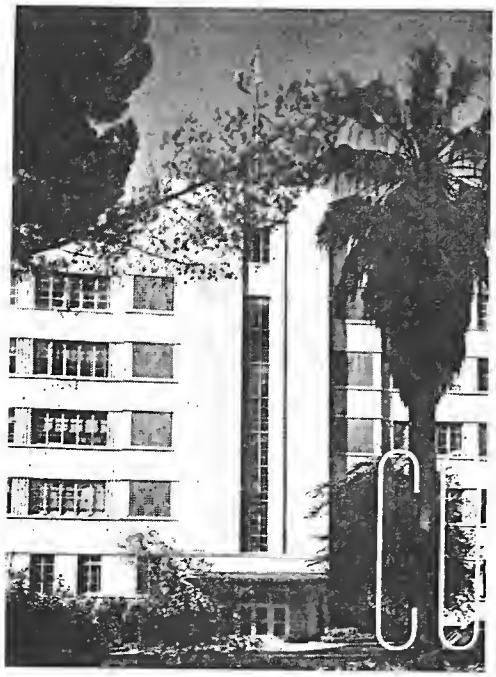
District IV freeway system planning has been based on comprehensive traffic information as well as collection of planning data, future population projection and probable land use changes. This has been done through public meetings, by discussions with those engaged in planning, public works, and pertinent operations in the cities and counties, as well as with the utility and industrial organizations and others who are similarly engaged in area development.

Progress Cited

Since funds for the expanded program of street and highway development were made available in 1947, we have made substantial progress. It may be too easy to forget the previous traffic conditions existing along our conventional highway and city street routes prior to improvements as freeways. There may be a tendency to neglect to appraise the situation which would have prevailed if the tremendous increases in traffic still had to be served by conventional facilities along these routes. In spite of this progress there is a great deal left to be accomplished. In District IV, there are a

... Continued on page 2

Photos at Top of Page. LEFT—A newly completed section of the Boyshore Freeway in southern San Mateo County. CENTER—A freeway section of U. S. 40 recently opened to traffic in Contra Costa County. RIGHT—The Richardson Bay Bridge on U. S. 101 in Marin County.



Public Works Building
Twelfth and N Streets
Sacramento

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DISTRICT IV

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total of 1,381 miles of state highway. Of this, approximately 1,000 miles are to be developed as freeways and routings for 537 miles have been adopted. Since 1947, 242 miles of freeway have been constructed, another 47 miles are under construction and 30 miles are scheduled for construction in the 1958-59 Fiscal Year.

The decade has witnessed the virtual completion of a basic network of the freeway system extending from the metropolitan Bay area in all directions. By the end of 1958, continuous freeways and expressways will be in service or under construction extending from Los Gatos to San Jose then via the Eastshore through Oakland to Sacramento; from Oakland to Tracy; from San Francisco to Moffett Field south of Palo Alto; and from San Francisco to Santa Rosa (with the exception of the portion through Novato). Other important routes are being progressively planned and constructed.

We are well advanced in development of the first stage of our planned construction along the heaviest routes of travel. Other areas must be afforded relief from present inadequacies and provision must be made for traffic demands of the future. One freeway alone could never serve heavily developed areas near large centers of population. Other freeways radiating from the metropolitan hubs to areas not served by present freeways must be provided if present unsatisfactory conditions of traffic congestion are to be eliminated.

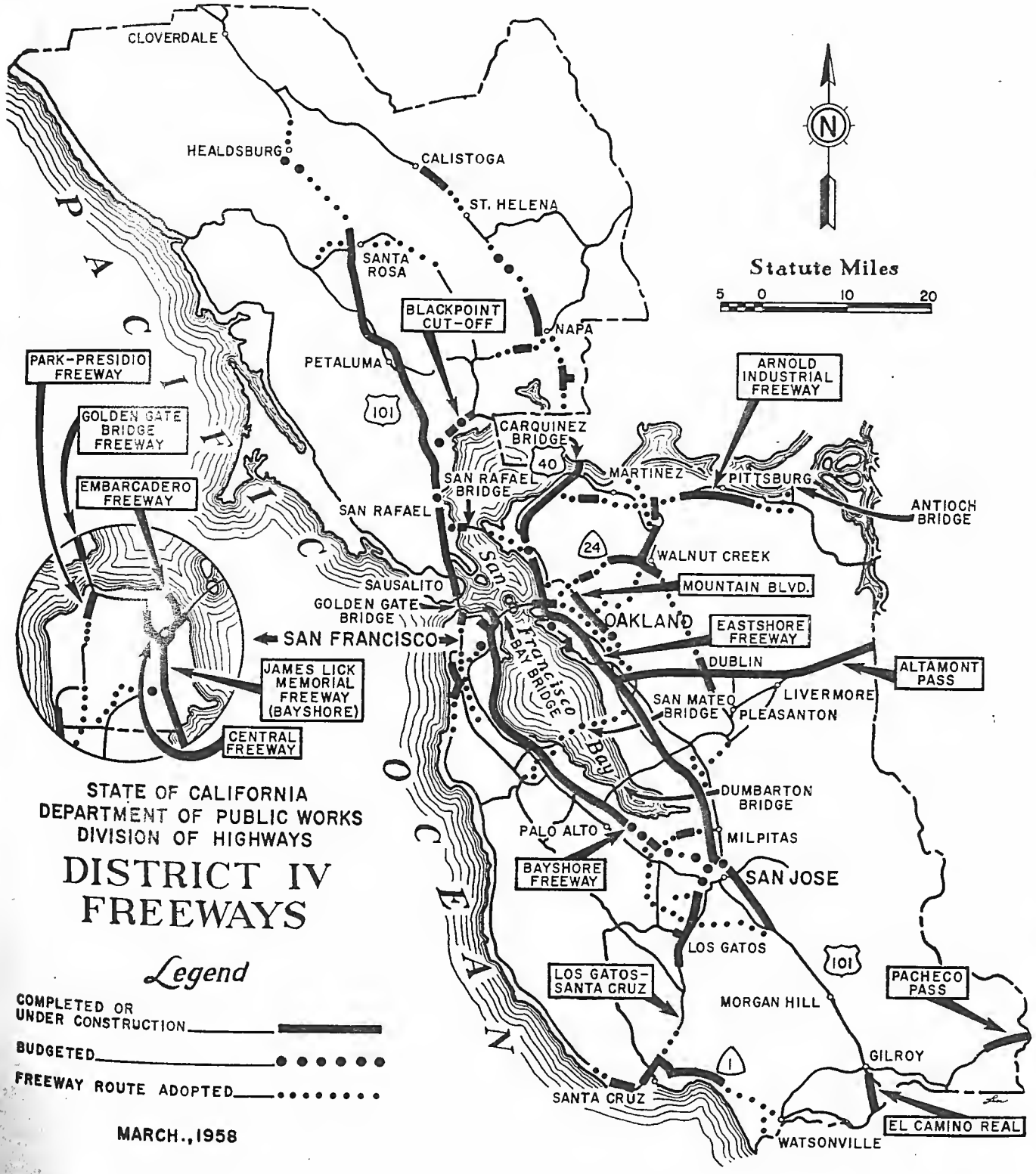
As is proper, the rights of the individual must be weighed along with the need of the many, and the highlight of the present picture of highways development is the democratic processes of discussion and deliberation by all parties concerned with the purpose of obtaining agreement upon the routes which will provide the greatest public benefit with the least private injury.

Let us review the accomplishments of the past year, as they fit into the existing pattern and as they project into the plans for the future.

US 101 and US 101 Bypass

Development to higher standards and extension of the freeway portions is continuing along these major north-south routes in District IV which extend from San Francisco to the north boundary of the district at the Mendocino county line, and to the south boundary of the district at the San Benito county line.

At the present time, the main activities, construction-wise, are concentrated along the US 101 Bypass (Bayshore Freeway) south of San Francisco from San Carlos to Palo



At the present time, the main activities, construction-wise, are concentrated along the US 101 Bypass (Bayshore Freeway) south of San Francisco from San Carlos to Palo

The double-deck Cypress Street structure on the Eostshore Freeway in Oakland. The southbound off-romp to 14th Street is ot the lower left.

Alto and further extensions are budgeted for 1958-59. The completion of these going jobs early this year will provide a continuous freeway for the 35 miles between the San Francisco-Oakland Bay Bridge approach (US 40) and Palo Alto.

Continued development of the freeway south to San Jose is assured with projects included in the 1958-59 Fiscal Year Budget. In this budget are projects extending from Palo Alto to the completed interim interchange at Moffett Field, as well as an interchange at the Mountain View-Alviso Road intersection and the extension of the freeway north of San Jose from Taylor Street to Brokaw Road. From Taylor Street south, there is now in existence a four-lane facility to the San Benito county line, portions of which are expressways.

Also being continued is the improvement of US 101 north of San Francisco. Major projects budgeted for this next year along this section amount to $4,617,000. The entire portion between the Golden Gate Bridge and just north of Santa Rosa is now in service as a four-lane, or better, divided facility. Most of it is now a freeway or expressway. Freeway construction is now under way immediately south of San Rafael and other projects, which will be started soon, will further improve sections of this highway.

US 101-101 Bypass in San Francisco

In San Francisco, US 101 follows the routing of the Southern Freeway to its connection with the James Lick Freeway (Bayshore) at the Alemany interchange. It then proceeds along James Lick Freeway to the Central Freeway connection at 13th Street and along the Central Freeway to Van Ness Avenue and to the Golden Gate Bridge and points north.

US 101 Bypass is that portion of the James Lick (Bayshore) Freeway southerly of the Alemany interchange to the peninsula and points south.

Much of these freeways through the City of San Francisco have now been completed or are under construction or budgeted. The James Lick (Bayshore) Freeway is completed from the Central Freeway to the south city limits of San Francisco.

Northerly, the Central Freeway is completed to South Van Ness Avenue. This portion of the Central Freeway was opened to traffic in 1955 as a single-level elevated structure and, along with the elevated portion of the James Lick (Bayshore) Freeway, is often referred to as the "Skyway." The remainder of James Lick Freeway from the Central Freeway at 13th Street to the San Francisco-Oakland Bay Bridge is a part of US 40 and will be covered under that route.

Under construction at this time is a 1.3-mile-long extension of the Central Freeway from South Van Ness Avenue to Turk Street. Completion of this $7,725,000 project is expected during the summer of 1959. This portion of the skyway will be a two-level elevated viaduct with the three southbound lanes carried above the three northbound lanes and both directions of travel will be elevated over the city streets, leaving them clear to handle the cross traffic movements. Shoulders for emergency parking aside of the through traffic lanes are being constructed on each level of this facility. Contractor on this project is the Peter Kiewit Sons Company.

As a portion of the future Golden Gate Freeway, design is underway for a 1.3-mile-long project extending between the Park Presidio Freeway and the Marina approach to the Golden Gate Bridge. This project will widen the present freeway to eight lanes and revise the interchange at the junction of US 101 and State Sign Route 1. Estimated construction cost is $5,700,000.

Within San Francisco the James Lick (Bayshore) Freeway is now complete. Continuation of landscaping, ground cover and erosion control work along this freeway will proceed. Funds totaling $75,000 for this work between Fifth Street and 17th Street are included in the 1958-59 Fiscal Year Construction Program. During the past year a double steel post guard rail was constructed in the median separating opposing traffic between 17th Street and Army Street with guide posts southerly to Third Street. This work approximated $46,900 in cost and was done by J. Henry Harris, contractor. Results of this installation in minimizing the number of and severity of spectacular accidents through this section are being carefully observed.

The double-deck Cypress Street traffic viaduct on the Eastshare Freeway thraugh Oakland. Nate the local service raads an each side.

With completion of the James Lick Memorial Freeway (Bayshore) in San Francisco, and as the major traffic distribution units of the Embarcadero and Central Freeways are now under construction, planning has been advancing toward other segments of the much-needed integrated San Francisco Freeway System.

Planning studies on the Southern Freeway have been completed and a route adopted for an eight-lane freeway following generally along the old Southern Pacific Railroad locations and Alemany Boulevard between Orizaba Avenue, near the south city limits of San Francisco, and the James Lick Memorial Freeway (Bayshore). Route location west of Orizaba Avenue is dependent on future location of the Junipero Serra Freeway. Studies and hearings for that freeway have been under way for some time.

Rights-of-way acquisition is well advanced with $8,685,000 appropriated

in the 1957-58 Fiscal Year. An additional $1,400,000 has been budgeted for rights-of-way in 1958-59. Overall construction costs on the entire 4.3 miles of this freeway are estimated at $18,000,000.

Early construction of the first unit of this freeway is assured—$4,730,000 of the estimated $6,900,000 construction cost of the first unit is included in the 1958-59 Fiscal Year construction budget. The remaining cost is to be financed in the 1959-60 Budget. This first unit consists principally of an interchange with the James Lick Freeway (Bayshore) at Alemany Boulevard together with freeway construction for approximately 0.5 mile to the west where it will reconnect to Alemany Boulevard. Grading will be continued to Trumbull Street. The City of San Francisco has plans for the easterly extension of this freeway from James Lick to connect with Southern Crossing Freeway approach, planning for which is now being made by the Division of Bay Toll Crossings. Neither of the latter two extensions are presently a part of the State Highway System.

San Froncisco to Palo Alto

Recently completed at the south city limits of San Francisco between Third Street and Butler Road in San Mateo County, was the last contract for freeway construction over the "open water fill" project across an arm of the bay between Candlestick Point and Sierra Point. As a direct result of this relocation, there is an estimated 20 minutes saving in travel time through this area during peak hours and a saving of 0.4 mile in distance. Construction work was performed by a total of seven contracts amounting to $7,710,000. Contractor on the final project, involving drainage and paving, was L. C. Smith and construction cost of this project was $1,563,000.

Funds in the amount of $246,000 are budgeted this next year for landscaping on this freeway, between Third Street and Butler Road.

From the south end of the open water project at South San Francisco to Bransten Road, just north of Redwood City, the freeway has been completed and in operation for some time. This work started in 1946 and was finished with the completion of the southernmost contract in 1955.

The remaining eight miles from Bransten Road to the Santa Clara county line has been under construction as four separate projects. The first of these was the Willow Road interchange which was finished in 1956. This project was selected for first construction to eliminate a very congested intersection as early as possible and prior to the time when the freeway could be constructed in its entirety to this point.

The second contract to be completed extends from Willow Road to 0.5 mile south of the Santa Clara county line and includes frontage roads on both sides southerly to Embarcadero Road in Palo Alto. It is expected to be finished during March, 1958. Included in this project is a major interchange at University Avenue. Construction cost on this 2.2-mile section approximates $1,900,000. Work was performed by Charles L. Harney, Inc.

The third contract is scheduled for completion by April. This two-mile project extends to north of Marsh Road including an interchange there. Charles L. Harney is the contractor on this $1,770,000 project. Provided in this contract, as well as in the other three, will be an initial six-lane, ultimate eight-lane freeway.

Construction is well under way on the remaining project which will link the above projects and the completed freeway to the north. This project is a 3.8-mile relocation from Bransten Road to 0.4 mile north of Marsh Road. The $5,550,000 contract is being performed as a joint venture by Piombo Construction Co., M & K Corporation, and Connoly and Pacific Co. The expected date of completion is the summer of 1958. Full use of the 35-mile continuous freeway facility will then be in effect between Palo Alto and the San Francisco-Oakland Bay Bridge.

Additional improvements are contemplated during this next year on already completed portions of the freeway. These include, in addition to the landscaping project on the "open water fill," a bus stop at the Third Avenue Interchange in San Mateo, a revision of the East Hillsdale Boulevard Interchange, and landscaping improvements between Peninsula Avenue and 16th Avenue in San Mateo.

Polo Alto to North of San Jose

Improvement is being continued this year throughout most of this section. Included in the 1958-59 budget is $11,540,000 for several major projects.

In the budgeted items is the extension of the freeway through Palo Alto to Stevens Creek near Moffett Field. This project will complete the freeway southerly to the completed Moffett Boulevard Interchange. Design of this 4.4-mile connecting link was based on the need for initial six lanes with provision made for eight lanes in the future when needed. Budgeted this fiscal year are funds in the amount of $3,265,000 for this $5,150,000 project. Construction is expected to start in the summer of 1958.

Completed in January of this year was the 1.1-mile section of freeway and interchange near Moffett Field at a cost of $1,031,000. Four lanes of this ultimate eight-lane freeway were constructed at this time along with a full four-quadrant cloverleaf with bus stop facilities at Moffett Boulevard. Contractor for this work was the firm of L. C. Smith Co.

By early summer, 1958, an interchange will be under construction at the intersection of the Mountain View-Alviso Road. Funds in the amount of $1,290,000 are included in the 1958-59 budget for this purpose.

Design studies are well advanced on the remaining sections of freeway to Brokaw Road, just north of San Jose, that the not already financed and which will eventually provide a continuous freeway to south of San Jose. It is anticipated that further improvements of this major freeway will be continued as rapidly as availability of funds and priority of other worthwhile projects will permit.

San Jose to San Benito County Line

Completed in 1957 was a four-lane, future six-lane freeway in the City of San Jose extending from north of Taylor Street to Santa Clara Street. This project eliminated the last of the

three-lane portions on the route. Contractor on this 1.6-mile-long freeway was Lew Jones and Leo F. Piazza. Construction cost was $1,681,000.

Budgeted in 1958-59 Fiscal Year is $5,100,000 for a four-lane, future six-lane freeway from 0.5 mile north of Brokaw Road to Taylor Street. A major interchange at the intersection of the Eastshore and Bayshore Freeways is included in this project as well as the extension of Sign Route 17 from this interchange to First Street in San Jose where it connects with another budgeted project completing the Sign Route 17 Los Gatos-San Jose Freeway development in this area.

South of Santa Clara Street to Ford Road, an expressway has been in operation since 1947. Eventually it is expected that intersections at grade will be replaced by interchanges and planning has proceeded accordingly.

From Ford Road to south of Gilroy, the last of the three-lane width through this area was eliminated by expanding to a four-lane section, between Ford Road and Llagas Creek in 1956. Location studies are still under way for a freeway routing.

South of Gilroy to the San Benito county line, 5.8 miles of four-lane expressway (future six-lane freeway) have been in operation since early 1951.

El Camino Reol—Son Froncisco to Son Jose

As the work of extending the US 101 Bypass (Bayshore) Freeway toward San Jose progresses, improvement of portions of El Camino Real (US 101) has also been under way. At numerous locations along this route, traffic signals, channelizations, and widening to four- and six-lane, divided or undivided, conventional city street boulevard standards have been constructed.

Completed in 1957 in the City of San Mateo was a 2.9-mile-long widening project extending between 31st Avenue and Poplar Avenue which widened the street to six lanes. This $505,000 project was performed as a co-operative project between the City of San Mateo and the State, with the city providing an estimated $112,000 of the funds required. Contractor on this project was Lowrie Paving Co. and Lord & Bishop.

Budgeted this next year (1958-59) is $1,455.000 for additional work along this route which will be accomplished in four contracts. The major project among these covers the 3.8 miles between San Tomas Aquino Creek in the City of Santa Clara and State Sign Route 9 in Sunnyvale at an estimated cost of $1,170.000. Work will consist of the grading and surfacing necessary to widen the highway to four lanes. It is anticipated that a start will be made on this work in the near future.

Additional widening work will be performed in the City of Millbrae where the highway will be expanded to six lanes at a cost of $150,000 for a distance of 0.6 of a mile. The city is contemplating additional work in conjunction with this project, including curbs, gutters, and parking lanes.

The other two contracts will involve signals and channelizations in San Jose, one of which will be at the intersection of Alma Avenue and the other at Cottle Road. Both of these are co-operative projects with the City of San Jose, and the city will provide $21,700 toward the expected cost of $156,700 for these projects.

US 101—Golden Gote Bridge to Mendocino

Continued progress was made in 1957 toward the completion of US 101 as a freeway. Funds are provided in the 1958-59 budget for additional work on this route.

Work was completed early in 1956 over the Waldo approach from the northern end of the Golden Gate Bridge to just south of the Richardson Bay Bridge. This improvement converted the inadequate four-lane undivided facility to a full six-lane freeway. It was dedicated and opened to

LEFT—This section of U. S. 40 in Contra Casta County was opened ta traffic in February. The scene is looking nartheast taward Oleum in the left backgraund. RIGHT—Another phata af U. S. 40 Freeway in Cantro Casta County laaking sauth taward Richmand. The interchange nearest the camera is San Pabla Dam Raad.

traffic on March 20, 1956. Construction and rights-of-way were financed jointly by the Golden Gate Bridge and Highway District and the Division of Highways.

Proceeding northerly and extending for a distance of 5.8 miles between Manzanita to just south of the Greenbrae intersection, freeway construction is now complete. Included in this section is the new six-lane bridge over Richardson Bay which was opened to traffic in the fall of 1956.

Other recent additions to the freeway include the portion completed and opened to traffic in the summer of 1957. This is the $1,480,000 project between the Richardson Bay Bridge and 0.3 mile north of Alto. Dan Caputo Company and Dan Caputo & Edward Keeble were the contractors on this initial six-lane, ultimate eight-lane section of freeway.

North and immediately adjacent to the above project, the freeway was also extended in 1957 to 0.6 mile north of the Greenbrae Intersection, a distance of 3.5 miles. Peter Kiewit Sons Company was the contractor on this $2,924,000 project.

Budgeted this year at the Greenbrae Intersection is the third construction stage of this important interchange. Funds are provided in the amount of $1,800,000 for the northbound bridge which, when finished, will complete the traffic separation at this point. The existing bridge at this location is now being used for one-way traffic, northbound, and this traffic presently continues to pass through the traffic signals at the junction of Sir Francis Drake Boulevard. After completion of the interchange, the existing bridge will serve as a part of the off-ramp and the signals will be utilized to control local traffic at the intersection only.

Under way at this time and expected to be completed in the spring of 1959 is a project extending 1.4 miles from the Greenbrae Interchange to 0.5 mile north of the California Park Overhead. This is the last link for freeway construction on this route south of San Rafael. Work consists of grading, paving and structures for a six-lane freeway at an estimated cost of $1,919,000. Twin three-lane bridges will replace the existing wooden structure over the Northwestern Pacific Railroad at California Park. Contractor on this work is the Frederickson and Watson Construction Co.

From 0.5 mile north of California Park to the north city limits of San Rafael, the freeway has been completed and in use for some time. Northerly of this point, as far as the entrance to Terra Linda, the highway has been declared a freeway and although left turns are physically prohibited, it has not been constructed to full freeway standards whereby access from immediate properties are controlled. Two hundred thirty-two thousand dollars is budgeted in the 1958-59 Fiscal Year for three more projects along US 101 in Marin County. These are $125,000 for the addition of a southbound truck lane over Puerto Suelo Hill, just north of San Rafael which will minimize congestion on through lanes due to slow moving vehicles on this sustained grade; $60,000 for the relocation of a truck scale at Gallinas Creek; and $47,000 for a reconstruction of the southbound lanes between Manuel Freitas Parkway and Miller Creek.

Completed in 1957 was a new Forbes Station Overhead Bridge. New twin bridges for an initial six-lane, future eight-lane freeway over the Northwestern Pacific Railroad were constructed. Contractor on this $500,000 project was Charles L. Harney, Inc.

From Forbes Overhead to south of Petaluma, a distance of 18.9 miles, the existing facility is an expressway except within the Town of Novato. Planning studies are now well advanced for the future development of this entire distance into full freeway standards with no at-grade intersections.

Now complete as a freeway is the 18.5-mile length extending from south of Petaluma to the south city limits of Santa Rosa. Construction was performed on five contracts, the first of which was a bridge at Petaluma Creek and abutment fills.

Within the above section, work was finished in December, 1956, on the 8.6-mile Petaluma Bypass between 1.4 miles south of Petaluma Creek and Railroad Avenue north of Petaluma. The project provided a complete freeway to Denman Flat and grading to Railroad Avenue. Work was performed by Parish Bros. & Carl N. Swenson Co., Inc., at a cost of $709,000. Thirty thousand dollars is included in the 1958-59 budget for landscaping on the 5.8-mile portion south of Denman Flat.

Two additional projects were completed in 1957 on this section of freeway. The first of these projects extended from Denman Flat to three miles north of Cotati at Wilfred, a distance of 7.9 miles. Work was performed by Parish Bros., Inc., and Parish Bros. & Carl N. Swenson Company, Inc., at an estimated construction cost of $2,700,000.

The other contract extended the freeway from three miles north of Cotati to a connection with the existing expressway through Santa Rosa. Construction cost was $2,869,000 and Guy F. Atkinson was the contractor on this 5.1-mile-long project.

North of Santa Rosa to the Mendocino county line the highway is not as yet constructed as a freeway. Route adoption for the future freeway location has been accomplished as far north at Lytton and a 1.4-mile portion of this section is budgeted for construction this year. This project will provide a four-lane freeway between Grant School, south of Healdsburg, and the Guerneville Road at an estimated cost of $2,480,000.

Design for the other portions of the freeway northerly of Santa Rosa to Lytton is under way and is well advanced. Initial construction as a four-lane facility, partially expressway, and partially full freeway, is planned.

From Lytton to the Mendocino county line, studies for future freeway development are under way.

Embarcadero Freeway

Work was completed in 1957 on the first two contracts of this multi-lane, elevated freeway which distributes traffic to and from downtown San Francisco. Freeway service is now provided from the on and off ramps at Beale and Main Streets, near Mission Street, to the Skyway as well as to the San Francisco-Oakland Bay Bridge.

Construction was started on the first of these contracts in May of 1955 by MacDonald, Young and Nelson, Inc., and Morrison-Knudsen. Construction cost of this 0.9-mile-long single- and double-decked project was $5,407,000. Second stage construction was performed by Charles L. Harney, Inc., at a cost of $1,921,000. This project provided a two-lane single-level structure for Oakland-bound traffic and the extension of the freeway to Howard Street as a four- and six-lane, two-level structure.

Under construction at this time is the third link in this freeway system extending it 1.2 miles from Howard Street, past the Ferry Building to Broadway and Sansome Streets. Completion of this $7,800,000 contract is expected during the summer of 1959. Charles L. Harney, Inc., is also the contractor on this two-level freeway. Extensive reconstruction work is required along this latest project including the relocation of portions of both the State Belt and Southern Pacific Railroad tracks and channelization of the Embarcadero alongside the freeway.

Western and Park Presidio Freeways

Preliminary studies are under way for the proposed Western Freeway from the intersection of Junipero Serra Boulevard, near Alemany Boulevard, north and east to a junction with the Central Freeway in the vicinity of Oak and Octavia Streets. Studies also include locations for a connection of the Park Presidio Freeway to the Golden Gate Bridge. A recent report of consultants hired by the City of San Francisco confirms the need for the freeways and a future report by them will discuss the routings.

Junipero Serra Freeway

In July, 1956, Joint Highway District 10 was dissolved and the Legislature designated the constructed portion of this route as State Highway Route 237. The Highway Commission adopted the existing facility from State Sign Route 1 in Daly City to Crystal Springs Road in San Bruno, and declared it to be a freeway. Subsequently, a portion of this four-lane divided expressway was repaved in 1957 and the major intersection at Hickey Boulevard was signalized and channelized. Construction cost was $195,000. Lowrie Paving Company was the contractor. It is anticipated that this route will be developed to full freeway standards in the future and planning is advancing accordingly.

In February, 1957, the Legislature designated Route 239 as being from a point on Route 56 (SSR 1) near Daly City to Route 2 (US 101) near San Jose. A short section along Moorpark Avenue in San Jose from Saratoga Avenue to new Sign Route 17 was adopted in November, 1957.

In addition to the short section above, the location for another portion of Route 239 was adopted by the Highway Commission on November 25, 1957. This portion extends between US 101 south of Ford Road and the new Sign Route 17, near Vasona Junction. Design studies are under way.

On the remainder of this new route, many meetings have been held with local authorities and the public concerning various possible locations and at the time of this writing, analysis of the results of the various meetings and studies is in progress.

Skyline Freeway-Sign Route S

In December, 1954, a 2.3-mile portion of expressway on Skyline Boulevard between Edgemar Road and Alemany Boulevard was placed in service.

Continuation of the expressway northerly of Alemany Boulevard 1.3 miles to the south city limits of San Francisco was completed in March, 1956. Concurrently, the City of San Francisco completed the 1.0-mile portion north of the city limits to Lake Merced Boulevard, also as an expressway.

Sign Route 1 Freeway

Scheduled for completion in March, 1958, is the $1,378,000 link between Edgemar on the coast route (Sign Route 1) and Skyline Boulevard at Edgemar Road. This 2.2-mile link included grading, surfacing and structures to provide a four-lane expressway. Contractor was the McCammon-Wunderlich Co. and the Wunderlich Contracting Co.

This project replaces the two-lane coastal road along the bluffs north of Edgemar which has been subjected in the past to numerous closures due to wet weather slides. Maintenance problems encountered have been difficult and costly and are being eliminated by this project.

Improvement of other portions of this highway to multilane standards at some time in the future is contemplated and in various stages of planning. The routing for a portion of this work, extending from a connection with the expressway now under construction at Manor Drive in Edgemar to Pedro Valley, was adopted as a freeway by the Highway Commission in January, 1958.

19th Avenue Freeway-San Mateo

Planning studies are complete for the 19th Avenue Freeway in the City of San Mateo. In March, 1957, the State Highway Commission adopted the route for this freeway extending from Sign Route 5 (Skyline Boulevard) west of San Mateo, to the Alameda county line at the San Mateo Bridge, a total distance of 7.2 miles. Design studies on this four-lane facility are well advanced and rights-of-way acquisitions are in progress. A freeway routing was previously adopted from the county line to the Eastshore Freeway by action of the Highway Commission in August, 1952.

US 40—San Francisco to East Bay

US 40 starts at the James Lick Skyway and Central Freeway Interchange (US 101) at 13th Street in San Francisco and proceeds across the Bay Bridge (US 40 and 50) and northerly via the Eastshore Freeway to the El Cerrito Overhead thence through Richmond and northerly.

From US 101 to the Eastshore Freeway, the freeway has been completed including connections to the Embarcadero Freeway just west of the Bay Bridge. The portion in San Francisco is referred to as the James Lick Skyway.

Faster service during peak hours has been obtained at the toll plaza on the east approach to the Bay Bridge as a result of the increased number of toll booths and drivers-side toll collections. Cost of this construction, amounting to $2,200,000, was financed by toll bridge funds and included widening and sur-

F
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#36
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212.1-3

SF Dept of Public Works

PRELIMINARY REPORT AND PLANS

CROSSTOWN FREEWAY

SAN FRANCISCO, CALIFORNIA

FEBRUARY 1958

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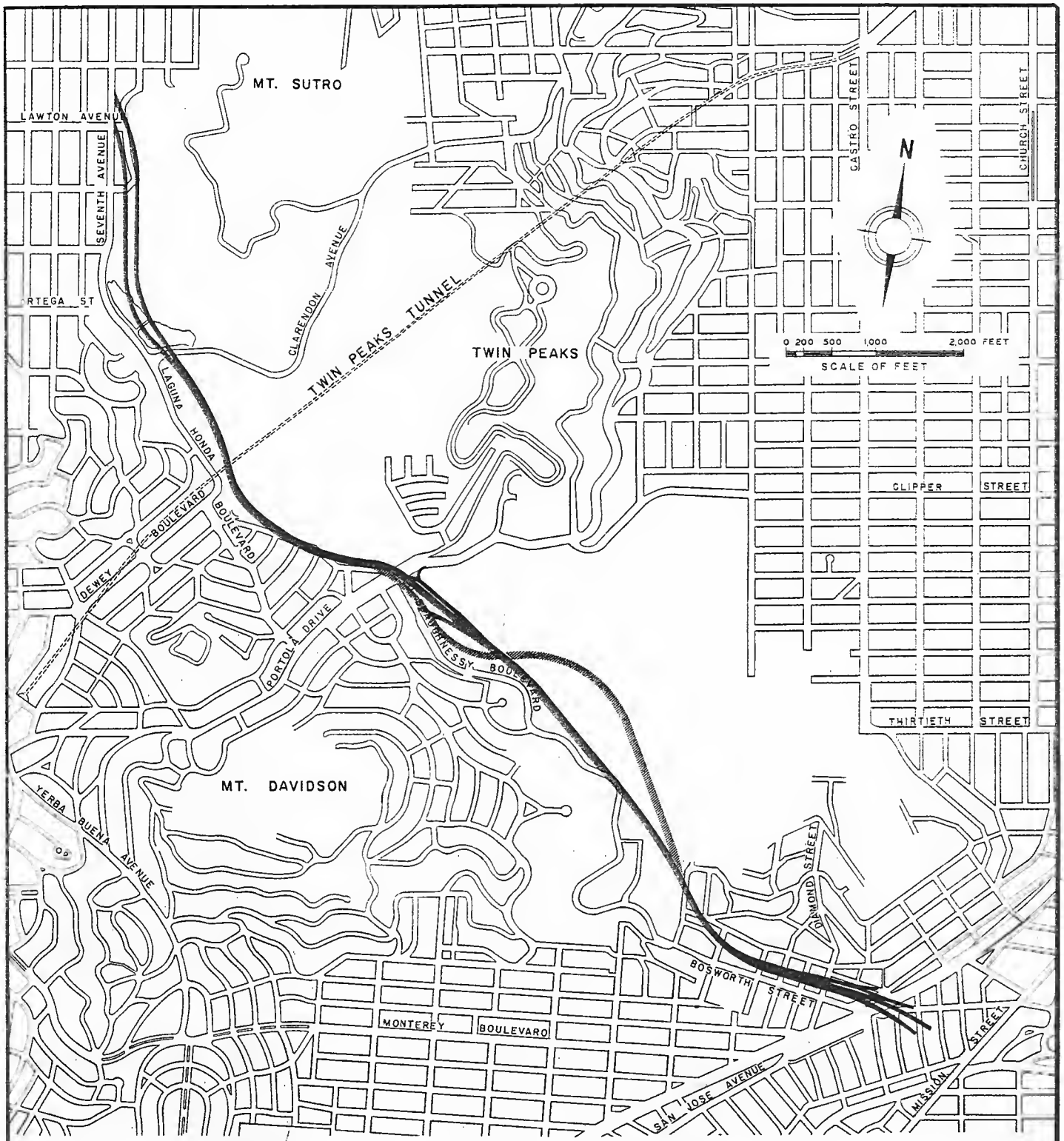
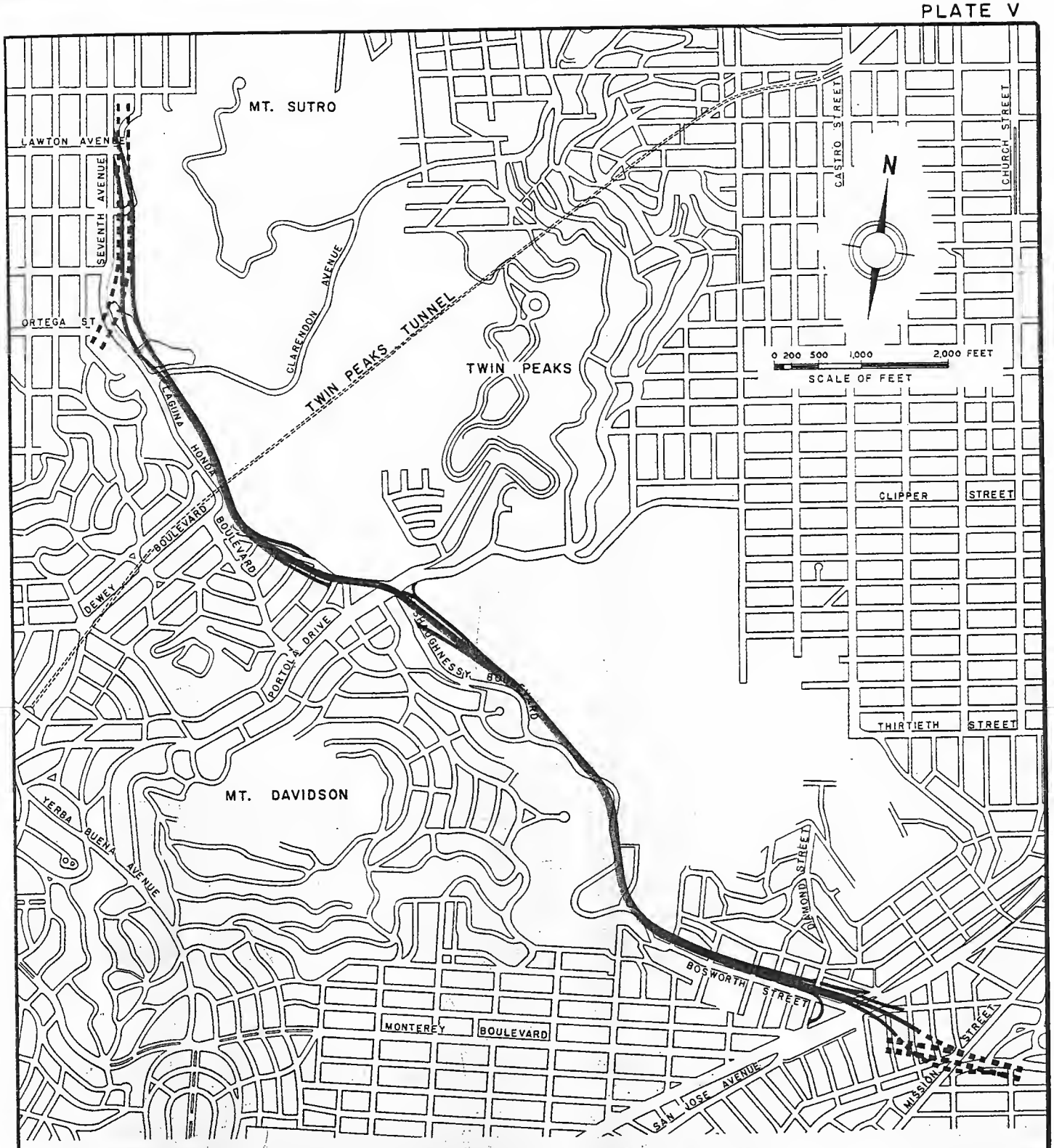
PLATE IV



LOCATION PLAN OF ALTERNATE ROUTES STUDIED

DE LEUW, CATHER & COMPANY · ENGINEERS · SAN FRANCISCO · AUGUST 1957

PLATE V



RECOMMENDED LOCATION OF CROSSTOWN FREEWAY

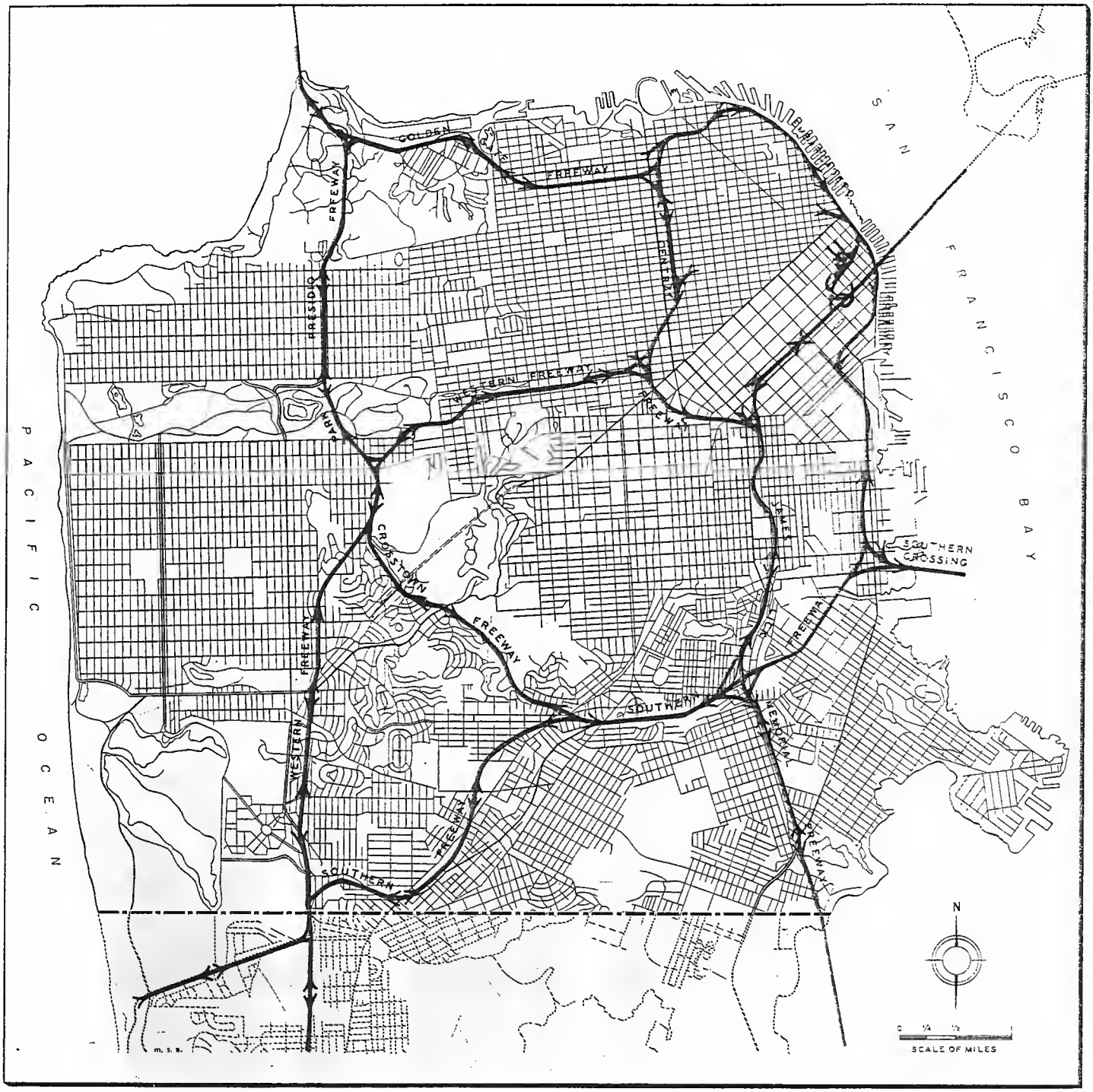
LEGEND

CROSSTOWN FREEWAY

FREEWAYS AND CONNECTIONS BY OTHERS

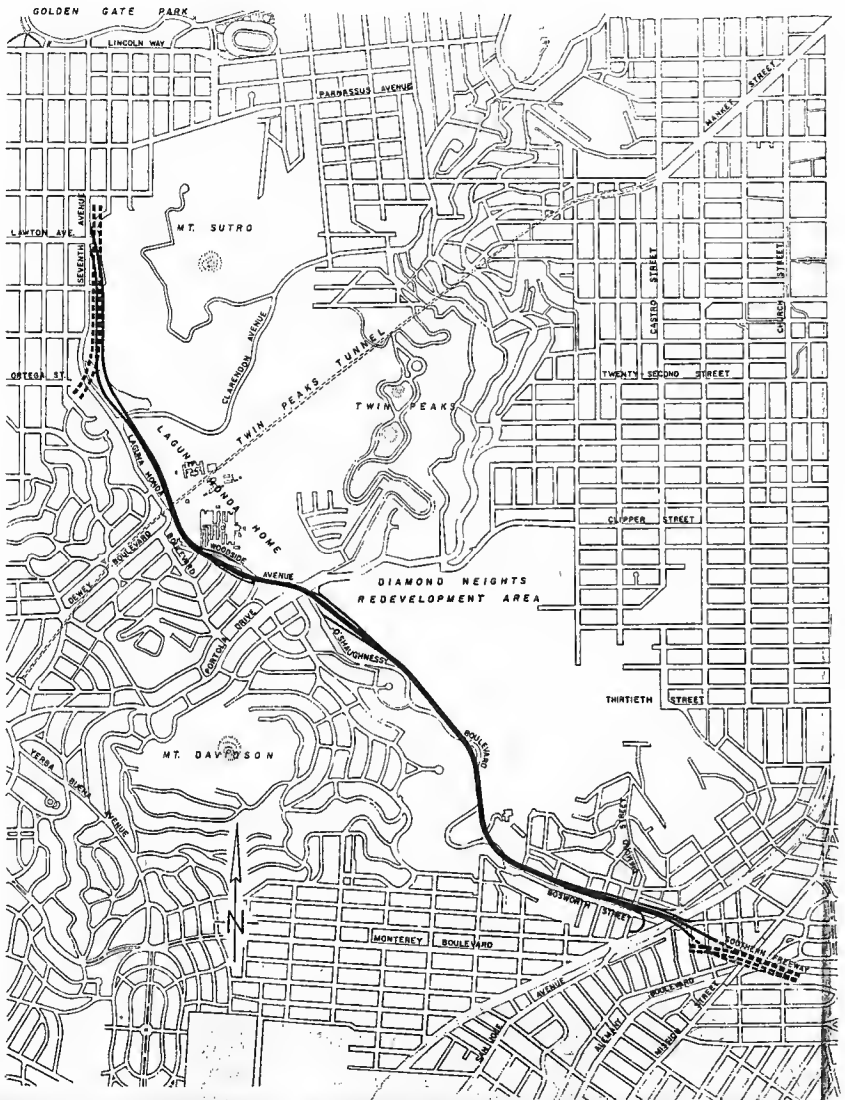
DE LEUW, CATHER & COMPANY · ENGINEERS · SAN FRANCISCO · JANUARY 1956

PLATE I



1980 SAN FRANCISCO FREEWAY NETWORK ASSUMED IN THIS STUDY

VIEW OF CENTRAL PORTION OF FREEWAY



LIST OF DRAWINGS

DRAWING NO.	SHEET NO.	TITLE
G-1	1	VICINITY MAP AND LIST OF DRAWINGS
R-1	2	PLAN AND PROFILE - SEVENTH AVENUE TO STATION 53+85
R-2	3	" - STATION "A" 49+00 TO STATION "A" 66+61.26
R-3	4	" - STATION 53+85 TO STATION 85+12
R-4	5	" - STATION 85+12 TO STATION 115+12
R-5	6	" - STATION 115+12 TO STATION 145+25
R-6	7	" - STATION 145+25 TO STATION 176+60
R-7	8	" - SOUTHBOUND INTERCHANGE WITH SOUTHERN FREEWAY STATION 176+60 TO STATION 186+28
R-8	9	" - NORTHBOUND INTERCHANGE WITH SOUTHERN FREEWAY STATION "B" 177+00.45 TO STATION "B" 187+77
R-9	10	TYPICAL ROADWAY SECTIONS
R-10	11	MISCELLANEOUS DETAILS
R-11	12	LOCATION OF TEST BORINGS - STATION "A" 55+80 TO STATION 120+00
R-12	13	" - STATION 120+00 TO STATION "B" 187+77
R-13	14	LOGS OF TEST BORINGS
R/W-1	15	RIGHTS-OF-WAY - STATION "A" 55+80 TO STATION 54+40
R/W-2	16	" - STATION 54+40 TO STATION 85+16
R/W-3	17	" - STATION 85+16 TO STATION 115+12
R/W-4	18	" - STATION 115+12 TO STATION 145+24
R/W-5	19	" - STATION 145+24 TO STATION 176+62
R/W-6	20	" - STATION 176+62 TO STATION "B" 187+77
U-1	21	MODIFICATIONS TO SEWER LINES - STATION "A" 55+80 TO STATION 55+85
U-2	22	" - STATION 55+85 TO STATION 85+05
U-3	23	" - STATION 85+03 TO STATION 115+12
U-4	24	" - STATION 115+12 TO STATION 145+25
U-5	25	" - STATION 145+25 TO STATION 176+60
U-6	26	" - STATION 176+60 TO STATION "B" 187+77
U-7	27	TYPICAL ORAINAGE DETAILS
U-8	28	MODIFICATIONS TO WATER DISTRIBUTION LINES - STATION 55+00 TO STATION 85+10
U-9	29	" - STATION 85+10 TO STATION 115+10
U-10	30	" - STATION 145+25 TO STATION 176+60
U-11	31	" - STATION 176+60 TO STATION "B" 187+87
U-12	32	MODIFICATIONS TO GAS DISTRIBUTION LINES - STATION 55+00 TO STATION 85+12
U-13	33	" - STATION 85+12 TO STATION 115+12
U-14	34	" - STATION 145+65 TO STATION 176+60
U-15	35	" - STATION 176+60 TO STATION "B" 187+77
U-16	36	ELECTRIC PLAN - STATION "A" 55+80 TO STATION 54+45
U-17	37	" - STATION 54+45 TO STATION 85+12
U-18	38	" - STATION 85+12 TO STATION 115+12
U-19	39	" - STATION 115+12 TO STATION 145+24
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S-4	47	TUNNEL UNDER PORTOLA DRIVE - PLAN AND PROFILE
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S-7	50	" " - THREE COLUMN BENT
S-8	51	SAN JOSE AVENUE BRIDGE OVER FREEWAY - PLAN, ELEVATION, AND SECTIONS
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S-11	54	SUPERSTRUCTURE OETAILS
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S-13	56	RETAINING WALLS - TYPICAL SECTIONS
S-14	57	BOSWORTH STREET BRIDGE OVER FREEWAY - PLAN, ELEVATION, AND SECTIONS

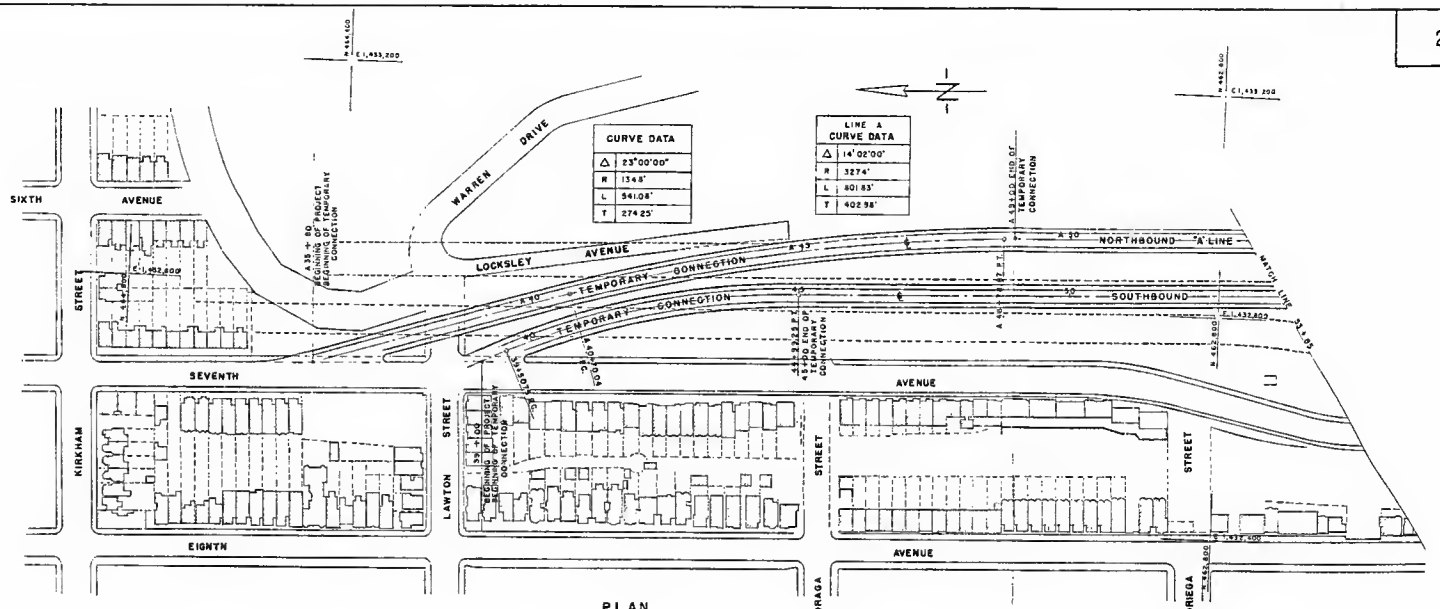
CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

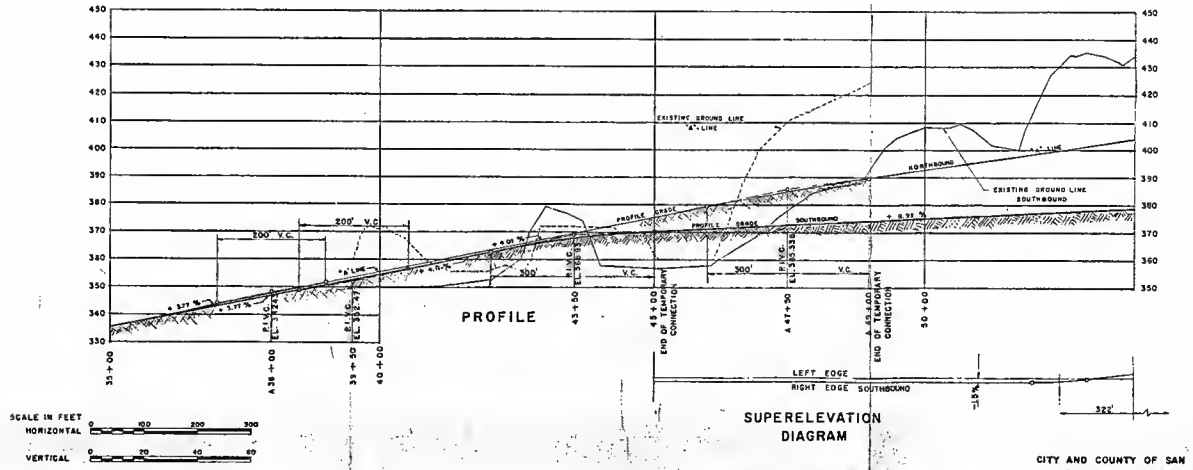
CROSSTOWN FREEWAY

VICINITY MAP
AND
LIST OF DRAWINGS

JANUARY 1959 DWG. NO. G-1

DE LEUW, CATHER & COMPANY - CONSULTING ENGINEERS - SAN FRANCISCO



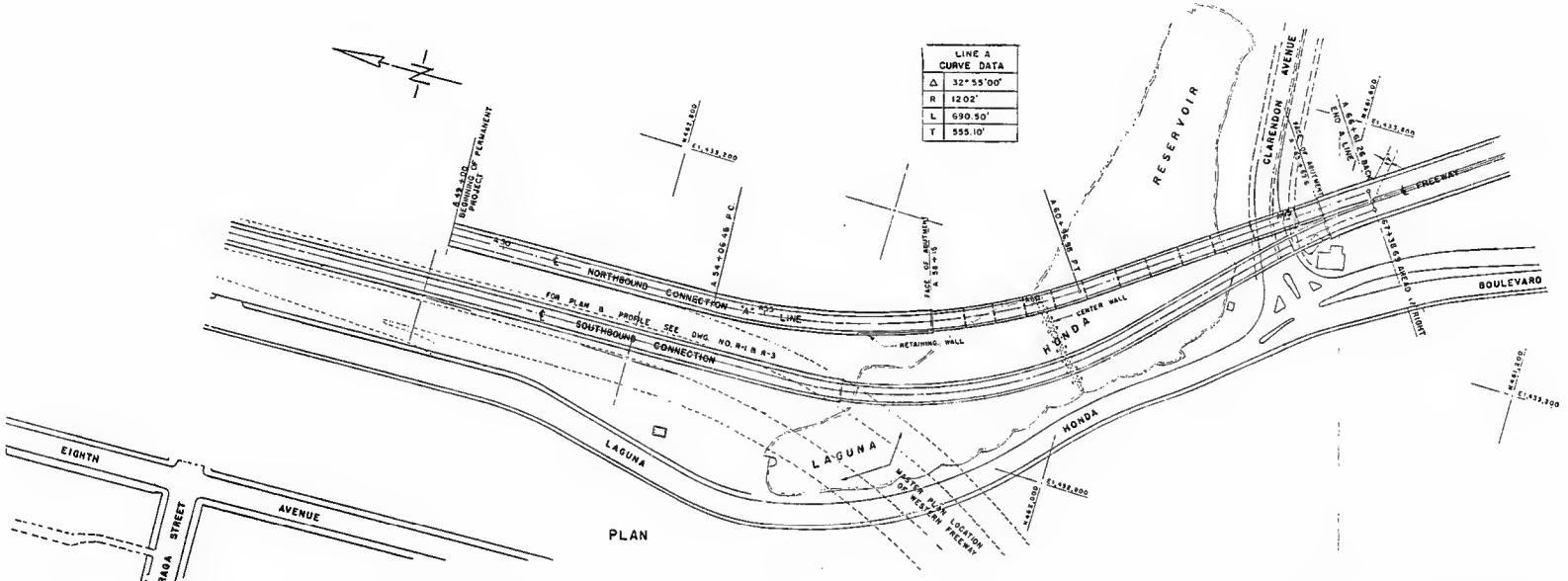


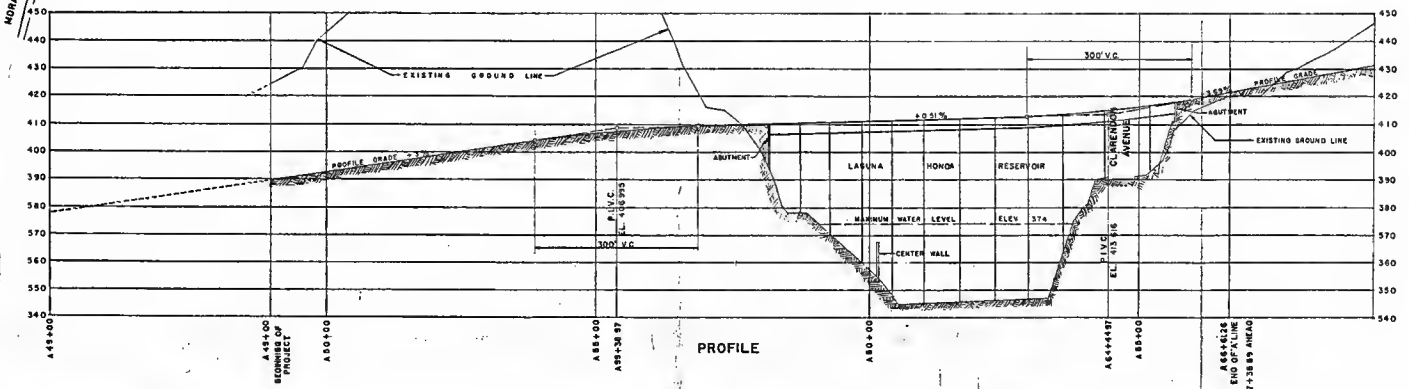
CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

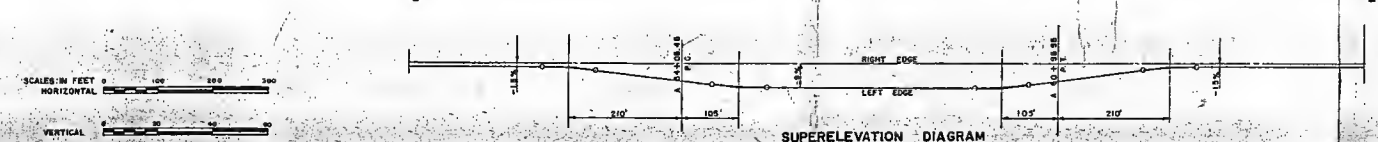
CROSSTOWN FREEWAY

PLAN AND PROFILE
SEVENTH AVENUE TO STATION 53+85

AUGUST 1957 DWG. NO. R-1







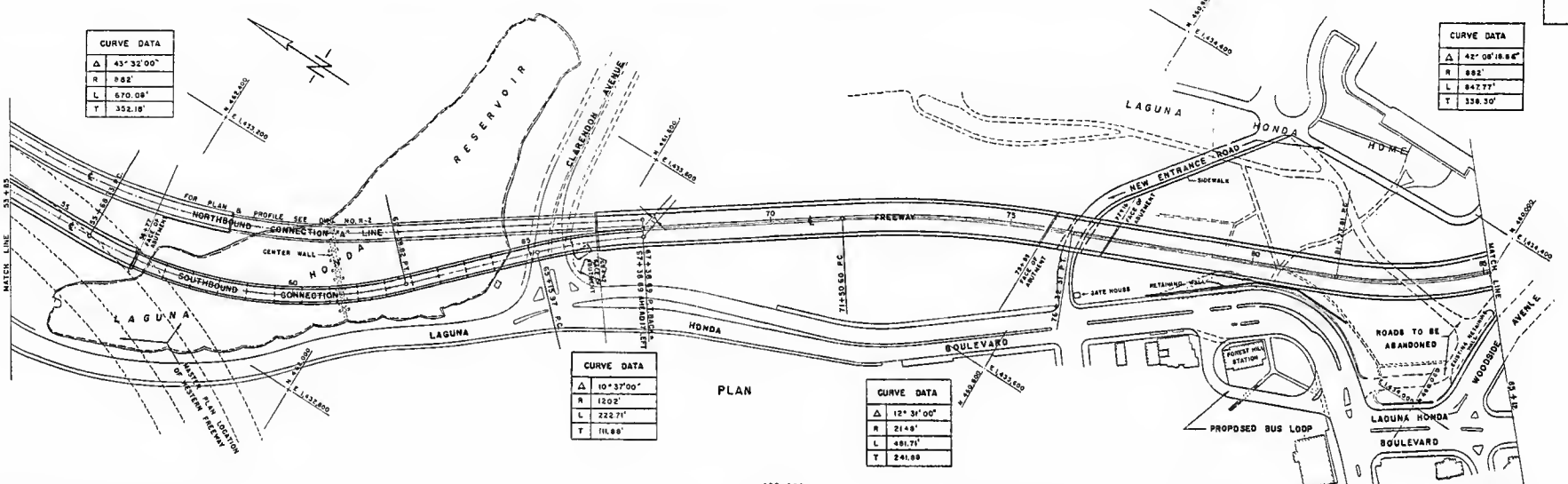
CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

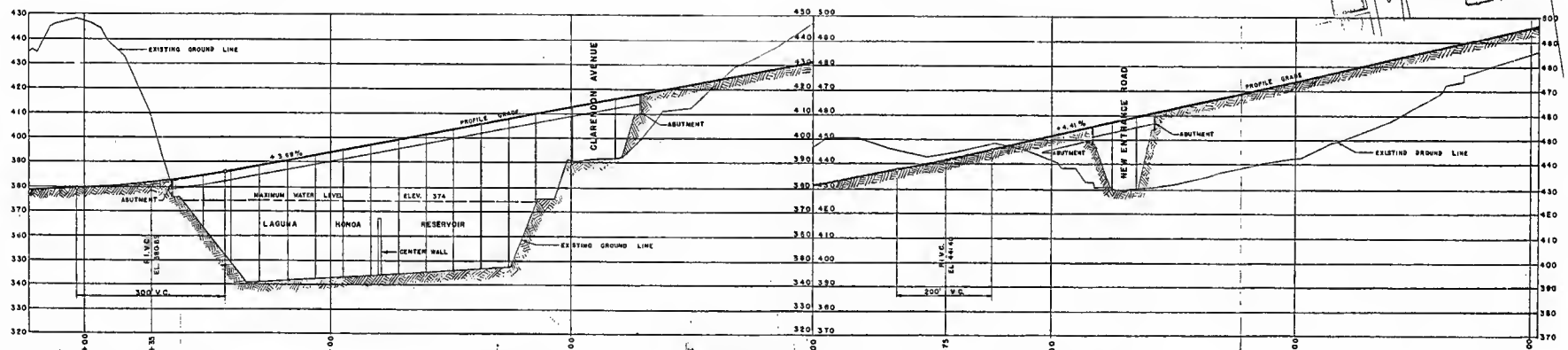
CROSSTOWN FREEWAY

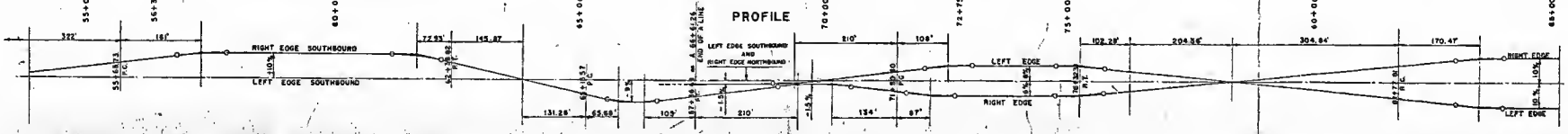
PLAN AND PROFILE
STATION "A" 49+00 TO STATION "A" 66+61.26

AUGUST 1957 DWG. NO. R-2

DE LEUW, CATHER & COMPANY - CONSULTING ENGINEERS - SAN FRANCISCO







SCALES IN FEET
HORIZONTAL 0 100 200 300
VERTICAL 0 20 40 80

CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

CROSSTOWN FREEWAY

PLAN AND PROFILE
STATION 53+85 TO STATION 88+12

AUGUST 1957 DWG. NO. R-3

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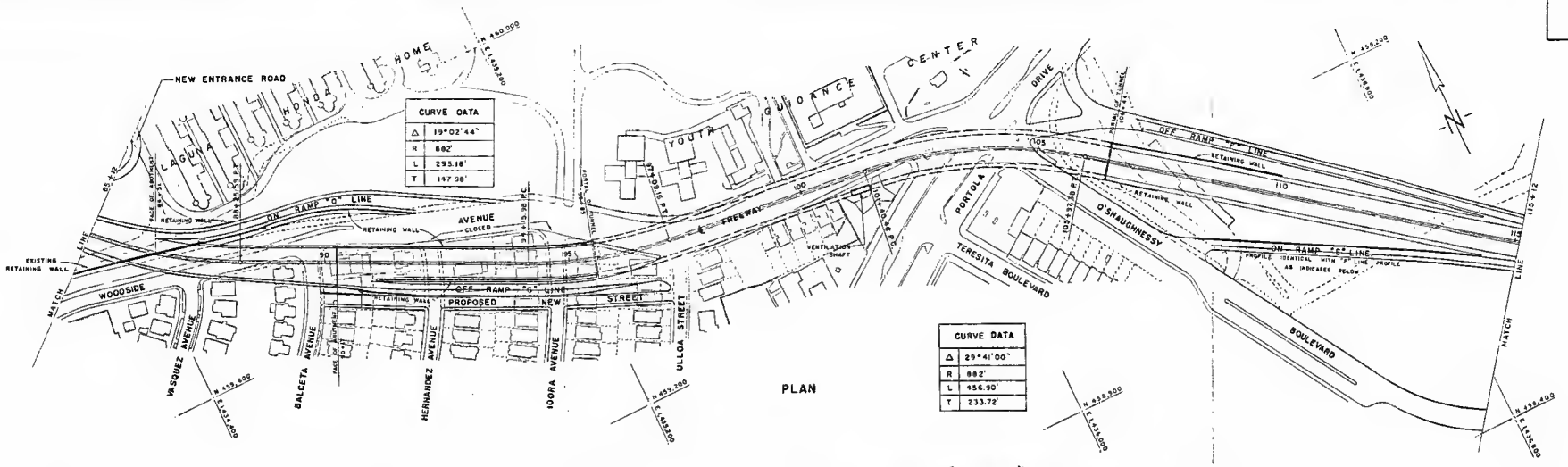

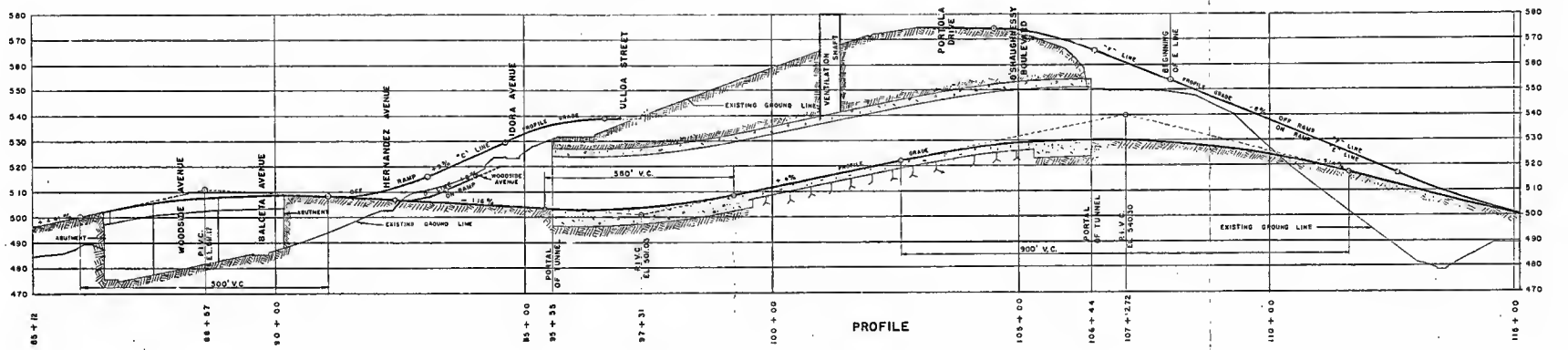

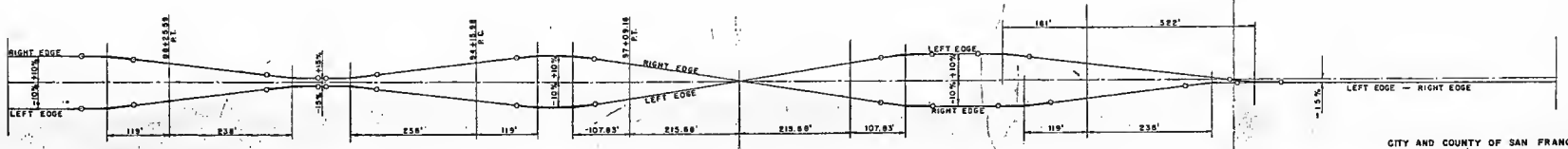

SCALES IN FEET
HORIZONTAL 0 100 200 300
VERTICAL 0 20 40 60

SUPERELEVATION DIAGRAM

CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

CROSSTOWN FREEWAY

PLAN AND PROFILE
STATION 85+12 TO STATION 115+12

AUGUST 1957 DWG. NO. R-4

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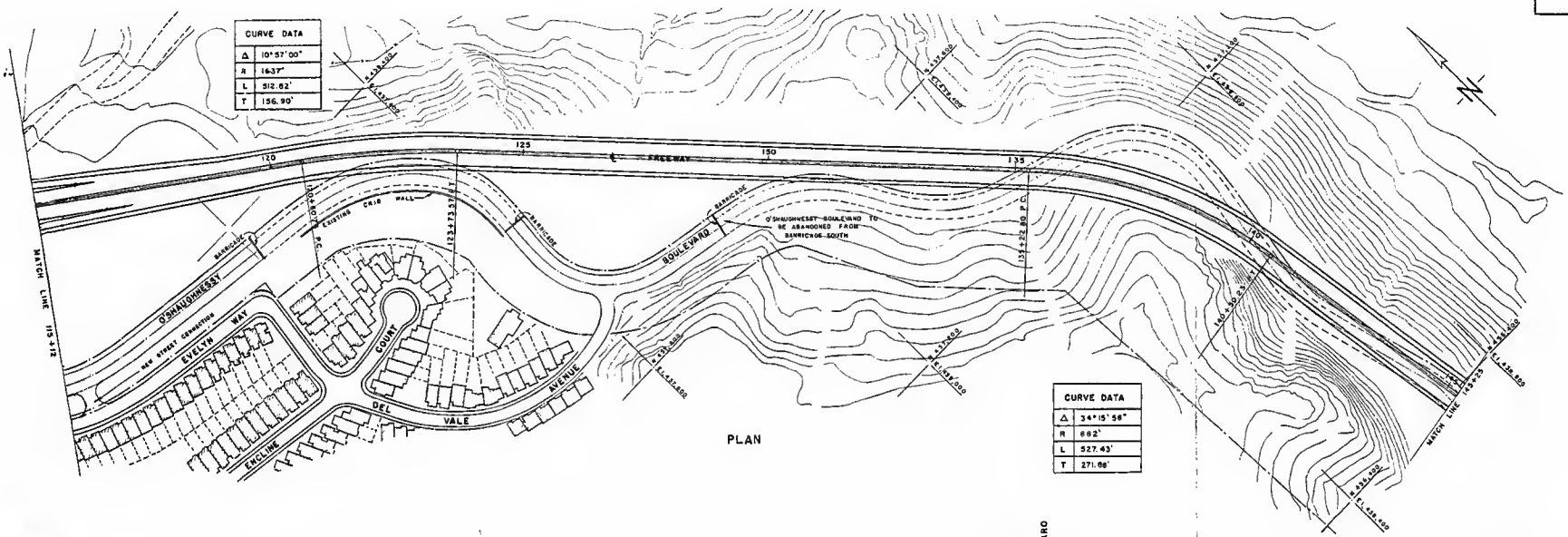
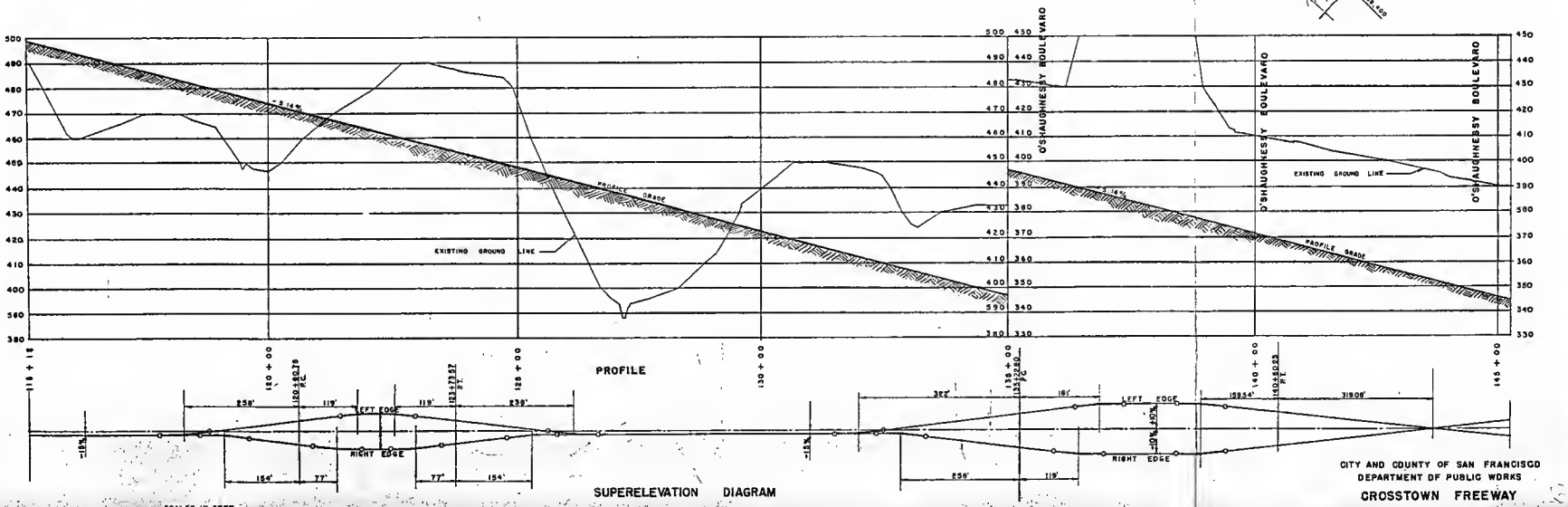
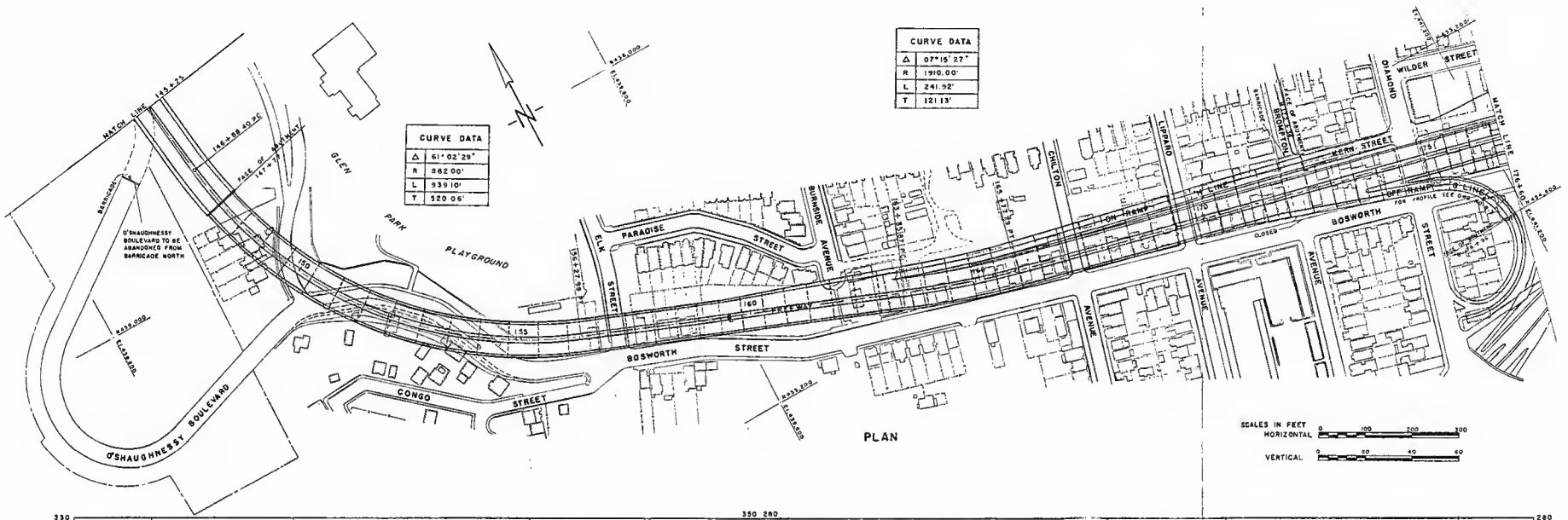




SCALES IN FEET
HORIZONTAL 0 100 200 300
VERTICAL 0 20 40 60

CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS
CROSSTOWN FREEWAY
PLAN AND PROFILE
STATION 115+12 TO STATION 145+25
AUGUST 1957 DWG. NO. R-5
DE LEUW, CATHER & COMPANY - CONSULTING ENGINEERS - SAN FRANCISCO

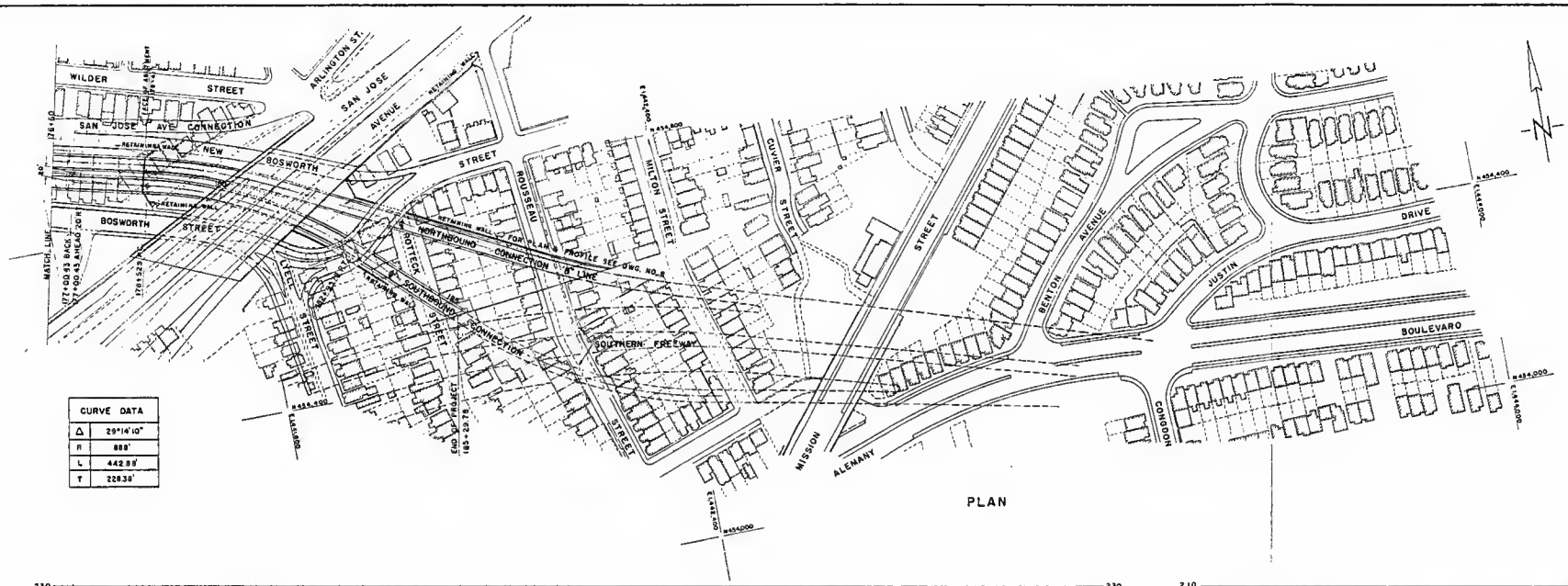


CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

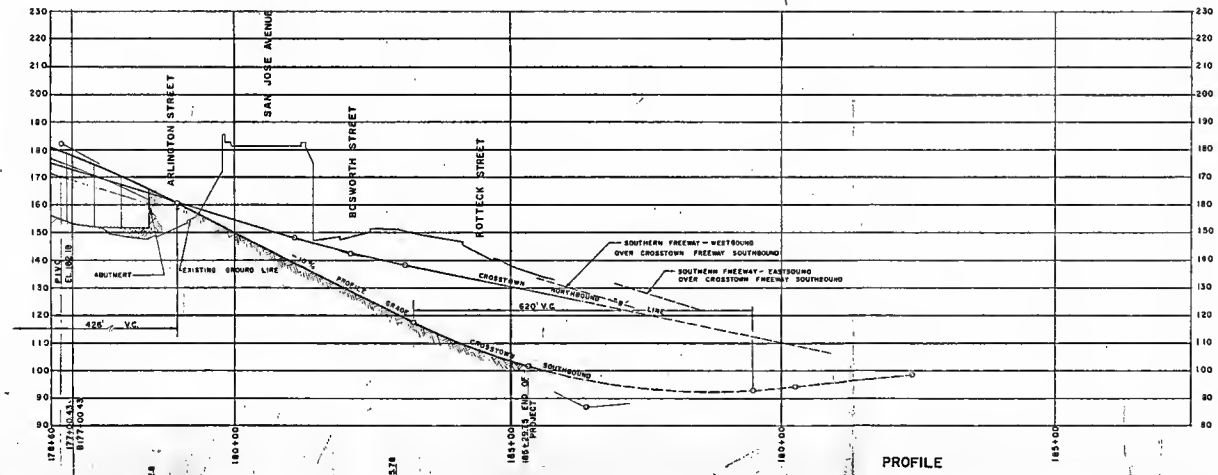
GROSSTOWN FREEWAY

PLAN AND PROFILE
STATION 145+25 TO STATION 176+60

JANUARY 1958 DWG. NO. R-6

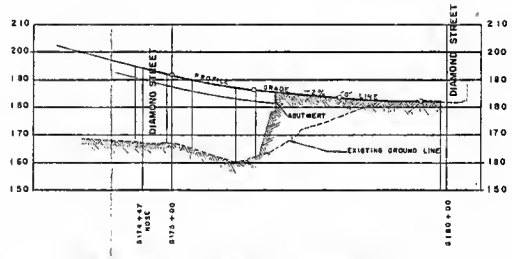


PLAN



PROFILE

SUPERELEVATION DIAGRAM



SOUTHBOUND OFF RAMP TO DIAMOND STREET

FOR PLAN SEE OWG. NO. R-6

SCALES IN FEET
HORIZONTAL 0 100 200 300
VERTICAL 0 20 40 60

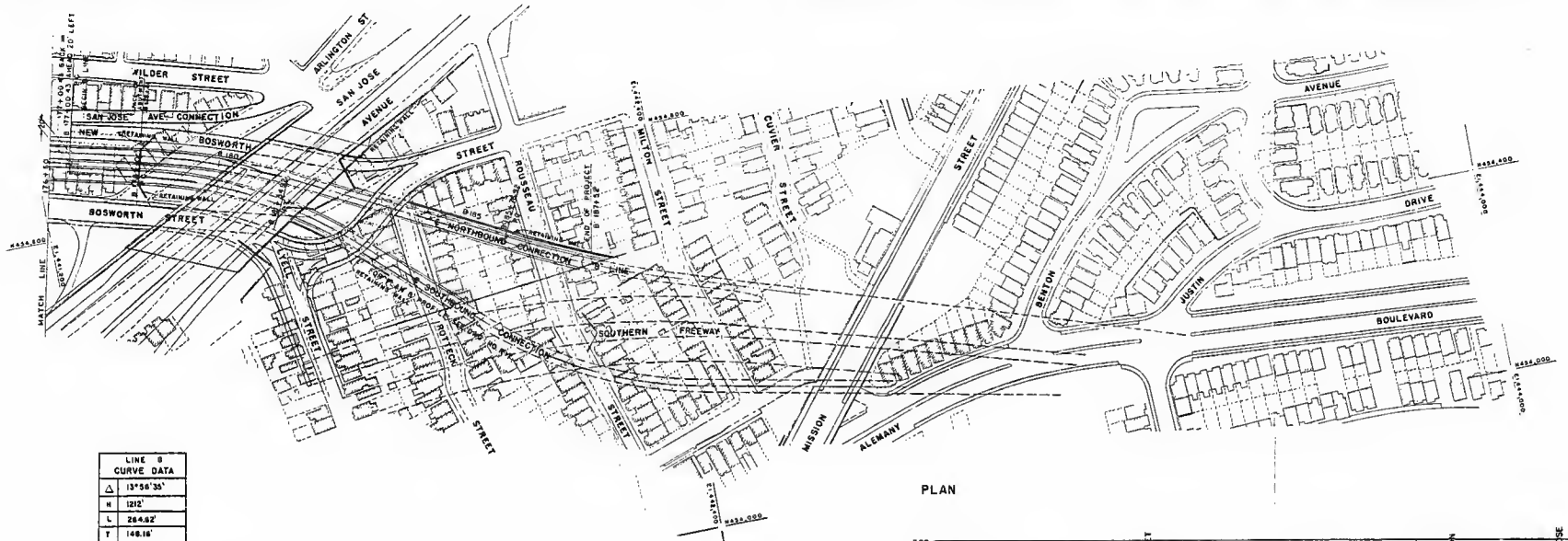
CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

CROSSTOWN FREEWAY

PLAN AND PROFILE
SOUTHBOUND INTERCHANGE WITH SOUTHERN FREEWAY
STATION 176+60 TO STATION 185+29.75

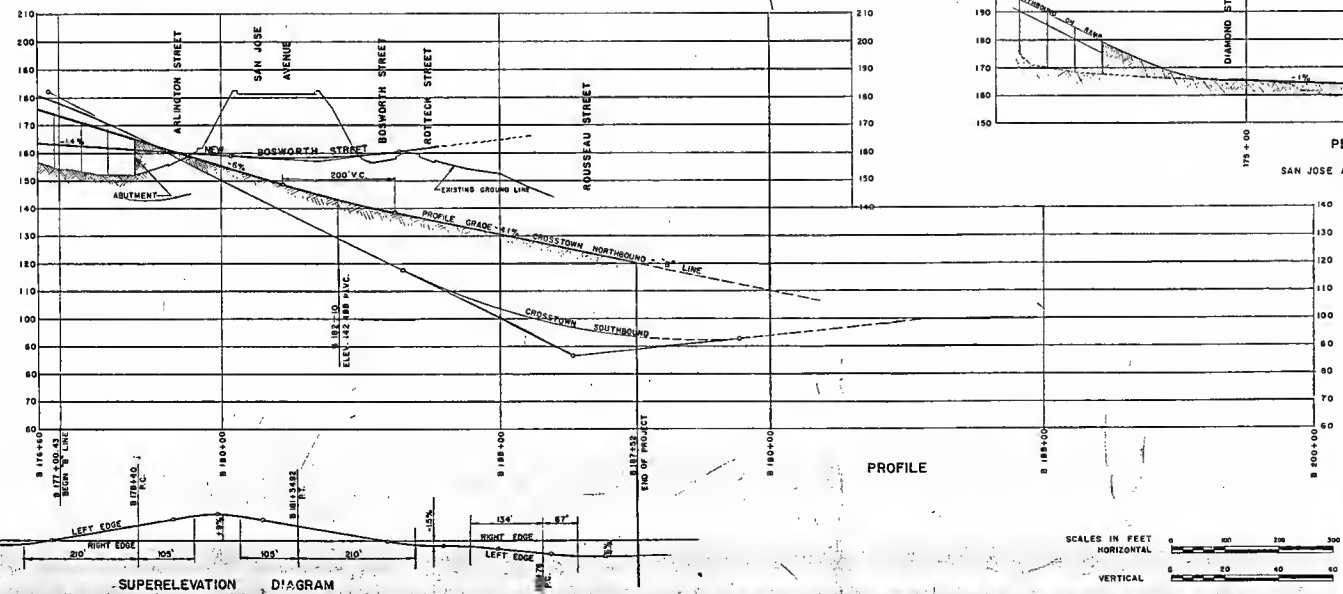
JANUARY 1958 OWG NO. R-7

DE LEUW, CATHER & COMPANY, CONSULTING ENGINEERS, SAN FRANCISCO

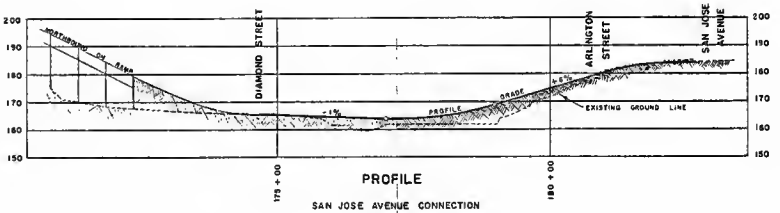


PLAN

LINE 'B' CURVE DATA	
Δ	13°56'35"
R	1212'
L	264.62'
T	148.18'

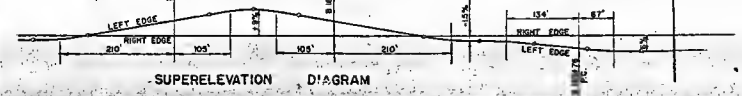


PROFILE



PROFILE

SAN JOSE AVENUE CONNECTION



SUPERELEVATION DIAGRAM

SCALES IN FEET
HORIZONTAL 0 100 200 300
VERTICAL 0 20 40 60

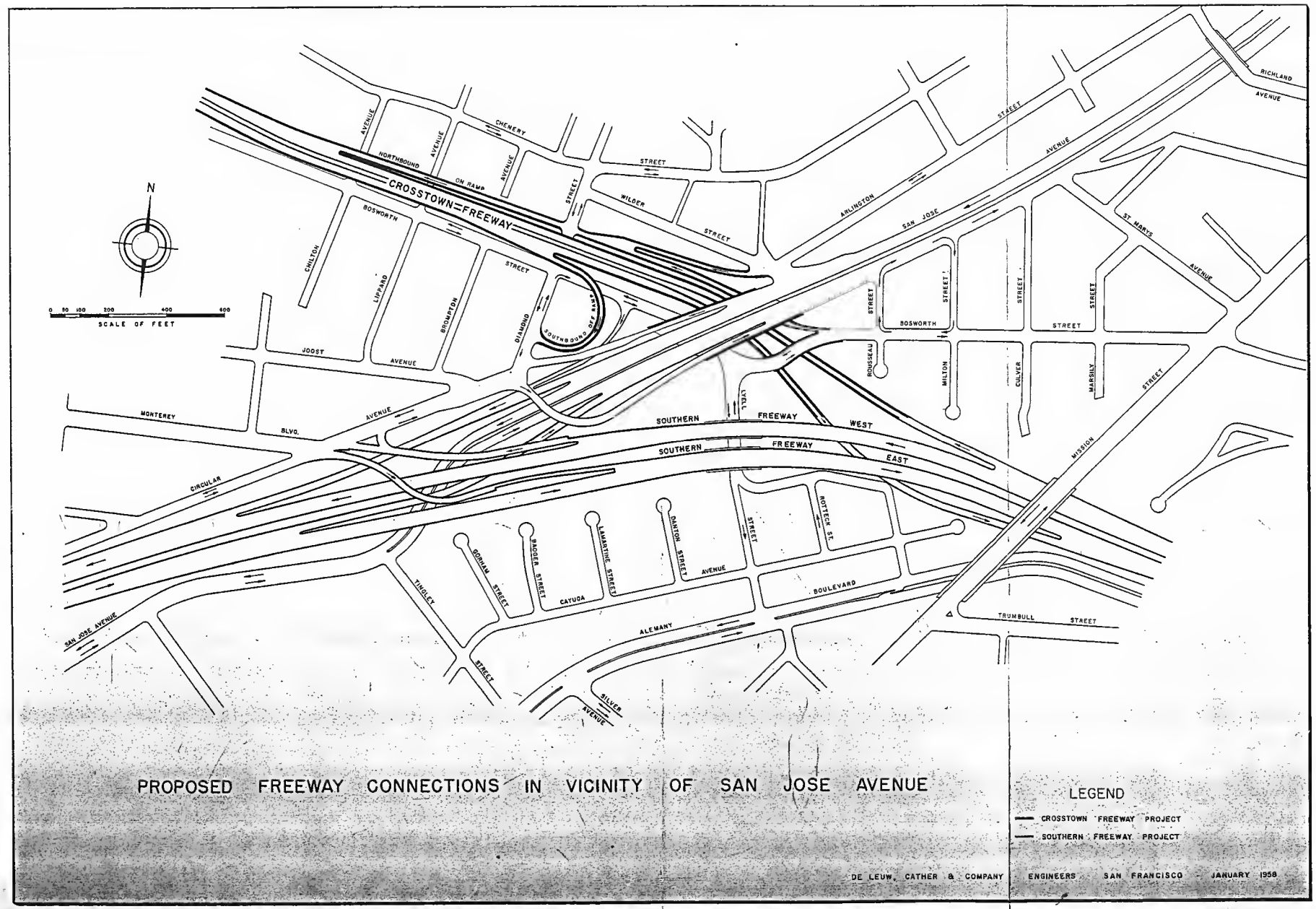
CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

CROSSTOWN FREEWAY

PLAN AND PROFILE
NORTHBOUND INTERCHANGE WITH SOUTHERN FREEWAY
STATION "B" 177+00.43 TO STATION "B" 187+52

DE LEUW, CATHER & COMPANY - CONSULTING ENGINEERS - SAN FRANCISCO

PLATE VI



PROPOSED FREEWAY CONNECTIONS IN VICINITY OF SAN JOSE AVENUE

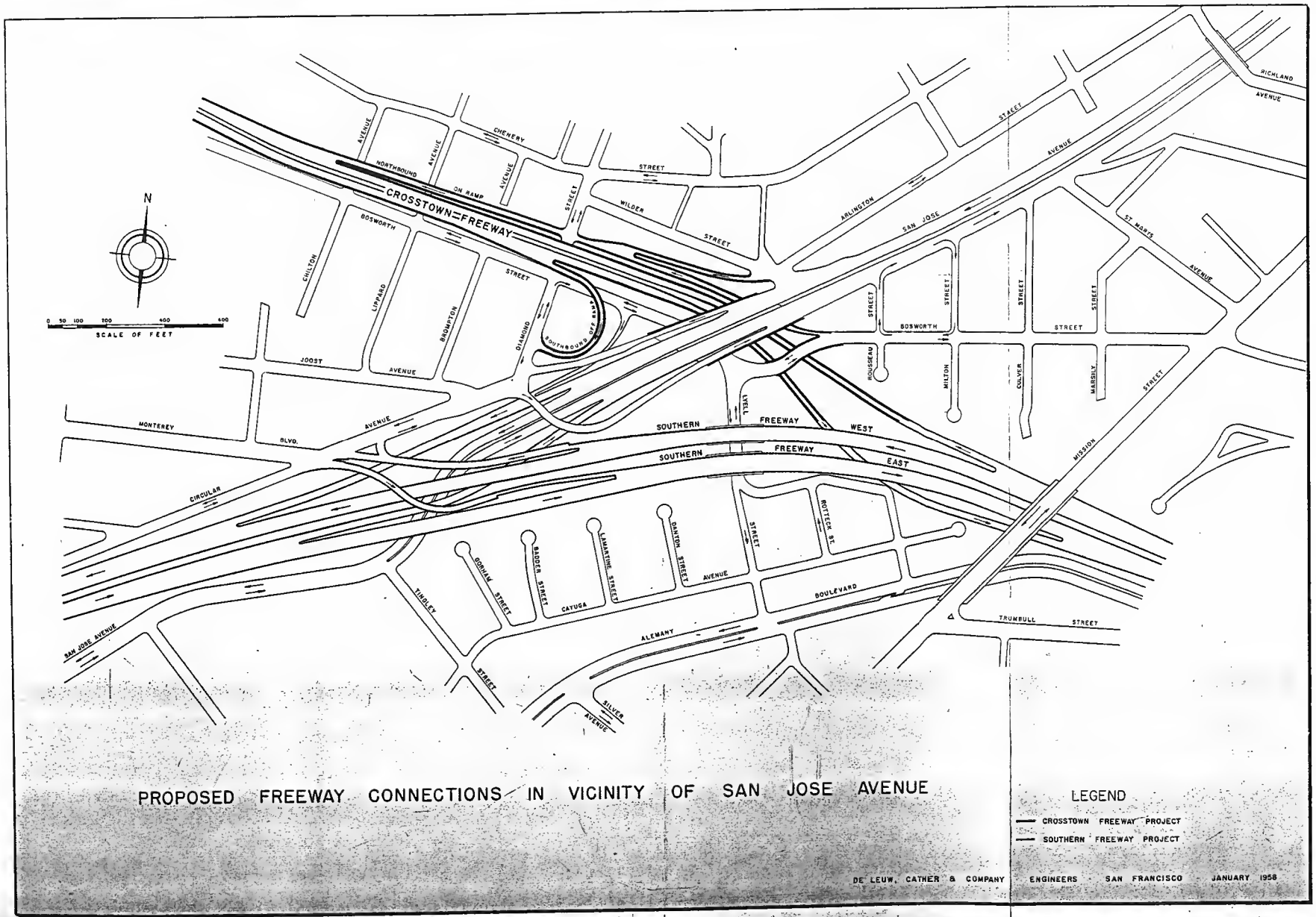
LEGEND

— CROSSTOWN FREEWAY PROJECT

— SOUTHERN FREEWAY PROJECT

DE LEUW, CATHER & COMPANY ENGINEERS SAN FRANCISCO JANUARY 1958

PLATE VI



PROPOSED FREEWAY CONNECTIONS IN VICINITY OF SAN JOSE AVENUE

LEGEND

— CROSSTOWN FREEWAY PROJECT

— SOUTHERN FREEWAY PROJECT

DE LEUW, CATHER & COMPANY ENGINEERS SAN FRANCISCO JANUARY 1958

May - June 1958

Pacifica Freeway

New Section Bypasses Old Coastal Highway

By LESLIE M. PETERSEN, District Design Engineer

THE CITIZENS of the new City of Pacifica on the Pacific coast south of San Francisco will celebrate this spring the opening of the new freeway from Skyline Boulevard to Manor Drive near the south end of their city. This project bypasses the old state highway along Thornton Bluffs, which has been one of the most difficult sections of state highway to keep open.

The old state highway along Thornton Bluffs was constructed in 1936. It was established generally along the location of the abandoned Oceanshore Railroad and for the most part consisted of a bench section along the face of a precipitous slope about 150 feet above the ocean. The aerial photograph included with this article shows the situation much more clearly than words can tell. The continued slipouts resulting from erosive wave action along the base of the bluffs and slides from the unstable slopes above made the maintenance of the road progressively more difficult and costly over the years.

Many Closures

The road was closed a total of 17 times during the seven winters between 1950 and 1957. These closures ranged from a period of one hour to a period of 120 days. The road was closed a total of 174 days during this time. During these periods of closure, the two county roads leading from Sharp Park and Edgemar to Skyline Boulevard served as detours. A third, Manor Drive, was extended to Skyline Boulevard in 1956. The closures resulted in considerable inconvenience and delay to the motorists involved.

The cost of correcting the slides and slipouts during this seven-year period was about $425,000 or an average of about $60,000 per year. This cost is in addition to normal maintenance expenses.

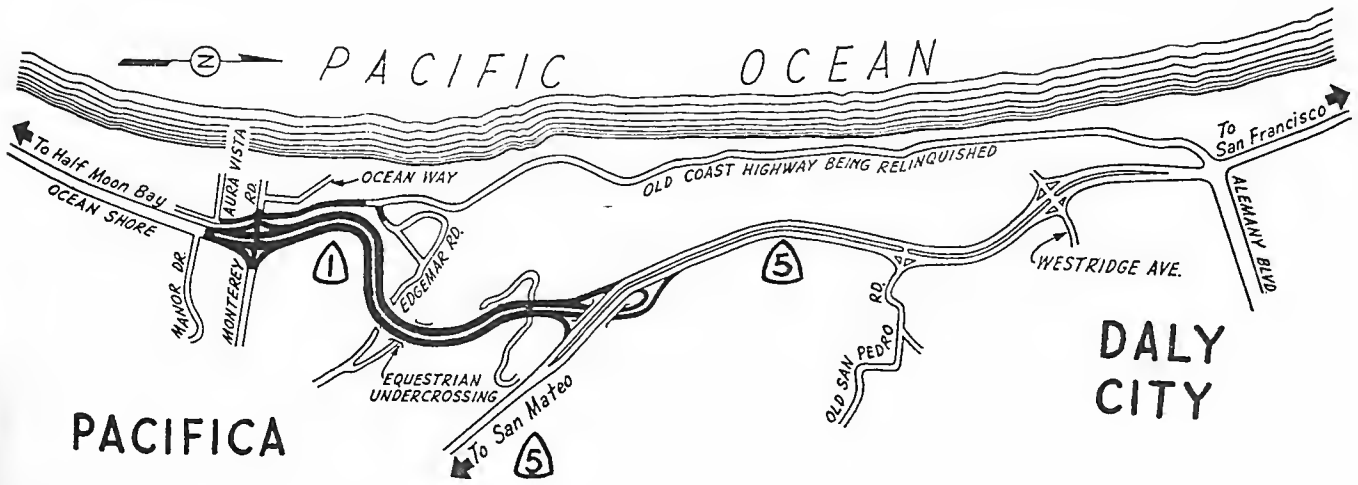
In addition to maintenance difficulties, it was obvious many years ago that the road along Thornton Bluffs would soon be deficient from a traffic standpoint. A four-lane roadway would soon be needed to accommodate the traffic to the fast-growing communities along the coast. The close proximity to San Francisco and the scenic beauty of the area have been attractions to thousands of prospective homeowners. Because of rugged terrain the area, until recent years, has been sparsely settled. The increased demand for housing has made it economically feasible to do the large-scale grading necessary to develop the hill areas into residential subdivisions.

New Road Built

The State Highway Commission adopted a new route bypassing this section on November 17, 1952. Construction of Route 55 on Skyline Boulevard between Edgemar Road and Alemany Boulevard was completed in December, 1954, at a cost of $630,000. This was constructed as a four-lane expressway with provisions for six lanes. Edward Keeble of San Jose was the contractor.

The contract for the section nearing completion was awarded to McCammon, Wunderlich & Wunderlich Contracting Company of Palo Alto on May 3, 1957. Their low bid was $1,291,659.

This project was principally an earth-moving job with over 1,000,000 yards of roadway excavation required. The deepest cut was about 140 feet and the highest fill was about 100 feet. There were two bridges constructed as part of the interchange at Skyline Boulevard and an equestrian crossing was constructed near the center of the



This aerial view shows the interchonge under construction connecting the new freeway with Skyline Boulevard (State Sign Route 5)

job to provide for a State Beaches and Parks horse trail.

This project was constructed as a four-lane divided expressway. The typical section consisted of four 12-foot lanes with a 10-foot dividing median and two eight-foot shoulders. An interchange was constructed with Skyline Boulevard and two channelized public road grade crossings were provided. Private access was restricted to new frontage roads or existing local roads.

The area traversed was largely undeveloped, and right-of-way problems were minor with one exception. A portion of the Globe Wireless overseas transmitting antennas had to be relocated. This was financed through right-of-way negotiations and relocated by the Globe Wireless Company.

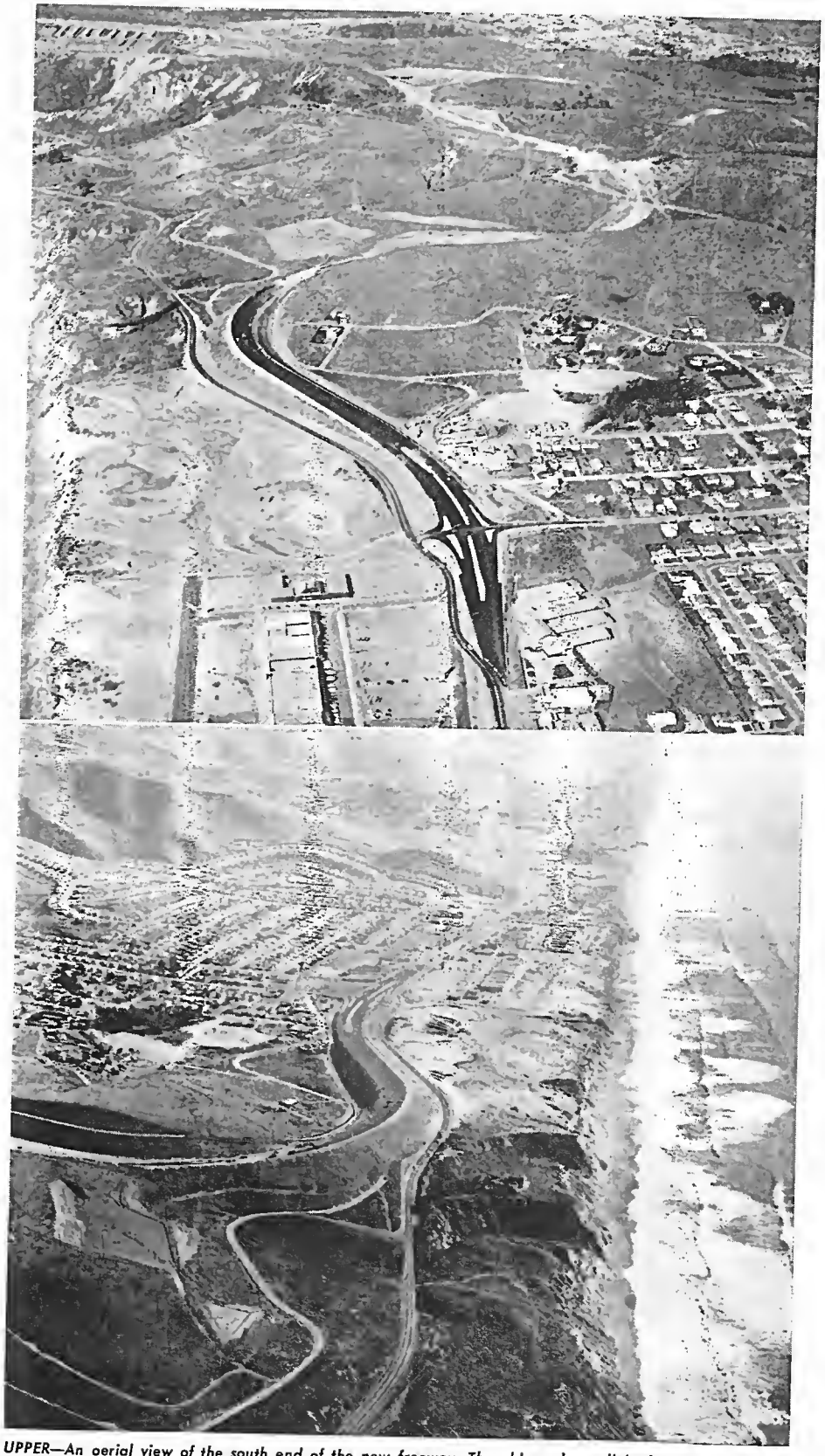
Fault Area

This project is almost entirely within the San Andreas fault zone. The principal faultline appears to be in the draw about the center of the job on which the highest fill was placed. After a geological investigation, it was decided the only provision that need be made for seismic conditions was to provide flatter slopes on the fill across the main fault and provide extra material near this faultline to provide correction for future vertical or horizontal shift.

The principal design problem was to make the 530-foot difference in elevation from the top of the hill at Skyline Boulevard down to the beach area at Edgemar. A sustained 7 percent grade and reversing 750-foot radius curves were used to provide enough distance to make the difference in elevation.

The superintendent for contractors McCammon, Wunderlich & Wunderlich was Elmo Campbell. The Division of Highways was represented by Resident Engineer E. L. Raymond with J. W. Beck as Bridge Department representative.

The State Highway Commission adopted a 4.8-mile southerly extension of this freeway through the new City of Pacifica to Pedro Valley on January 22, 1958. Design of this section is now under way.



UPPER—An aerial view of the south end of the new freeway. The old road parallels the new freeway on the left before taking out around the Thornton Bluffs in the distance. LOWER—Looking south over part of the Thornton Bluffs showing the old highway (middle foreground) and the new freeway curving up the slope to the left.